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BENIGN LESIONS OF THE STOMACH AND DUODENUM

THE CHOICE OF SURGICAL PROCEDURE WITH SPECIAL REFERENCE TO LATE RESULTS *

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The surgical treatment of benign lesions of the stomach and duodenum is one of the most important problems of abdominal surgery. The brilliant work of contemporary surgeons has demonstrated that such lesions are curable, in the majority of instances, by properly selected surgical procedures, and that restoration to health may be perfect and permanent. That this happy result fails of achievement in some instances places a burden of heavy responsibility on one who, in case of failure, must review his procedure, and determine whether the fault lies in any error of judgment in selecting the mode of treatment, or failure in the execution of some point in technic.

A brief review, therefore, of the methods in vogue for the treatment of these lesions, seems not amiss; for while much in the line of standardization has been accomplished, much remains to be done. It is not my intention to give even a brief historical review of the surgery of benign lesions of the stomach and duodenum. All honor is due to the able and brilliant pioneers in this field who have blazed the trail, and the limitations of space will not permit of an attempt to do them justice. To the active surgeons of our own time, however, history will give credit for the work which has put surgery on a sound and practical basis, and has made safe and a matter of routine, operations which, a few brief years ago, were hazardous in the extreme and uncertain of outcome.

Here, again, I must beg indulgence if in mentioning the Mayos, Ochsner, Murphy, Rodman, Deaver, Finney — names inseparably connected with the most valuable advances in stomach surgery — I omit many others who well deserve mention on this honor roll. To Weir belongs the credit of being the first to call attention to the occurrence and probable frequency of duodenal ulcer years before its great importance was clearly recognized.

While lesions of the stomach and duodenum have much in common, and much confusion of reports and of symptoms has existed in the past, duodenal ulcer now occupies a position of its own and is recognized as the most common and, in many ways, the most important lesion of the upper gastro-intestinal tract. Of its occurrence, pathology, and symptoms I shall say nothing, as these features have been exhaustively discussed. The vital question, after all, after the diagnosis has been made, the abdomen opened, and the lesion demonstrated, is: What shall be the choice of operative procedure to cure the disease and effect a permanent restoration of the patient to health?

It is difficult to appreciate what the past few years have done for the surgery of benign lesions of the stomach and duodenum. In analyzing the case records of the past five years at the Roosevelt Hospital, one is impressed by the increasing confidence with which the various benign lesions are approached surgically, and the more definite rules of procedure which have been gradually evolved.

I shall speak chiefly of procedures which have actually been used in this series of cases, and the results which have been a matter of personal observation. A study of our records shows that simple gastro-enterostomy has been the routine treatment of chronic ulcer of the duodenum, and that pyloric exclusion or excision of the ulcer has rarely been resorted to.

While much has been written for and against it, gastro-enterostomy still remains the operation of choice, either with or without some form of pyloric exclusion, and I shall consider whether the late results of this operation justify this choice. A preliminary word as to the reason why this seemingly inadequate procedure is capable of effecting a cure of the disease.

The two theories most commonly advanced are drainage and chemical effect. It is my opinion that both are factors, and that they are to some extent interdependent.

Certain it is that the clinical result in a goodly percentage of cases of uncomplicated chronic duodenal ulcer is most gratifying, especially the late results. Cannon and Blake[1] demonstrated by animal experimentation in 1905 that a gastro-enterostomy opening would in time close if the pylorus remained patent, and from their results the conclusion has been drawn that this would occur in the human body, as a rule, when gastro-enterostomy was done without pyloric occlusion.

The late results in our series may be of some interest, therefore, as bearing on the question of permanency of the artificial opening and the cure of this condition by simple gastro-enterostomy without pyloric exclusion.

I have collected a number of roentgenographic late observations, some of them more than four years after gastro-enterostomy, which seem to prove that this reasoning is fallacious, for the majority of the gastro-enterostomy openings are functionating in spite of a pylorus known to be patent and not occluded at the time of operation.

* Chairman's address, read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Cannon and Blake: Ann. Surg., 1905, xli, 686.

The fact that the patency of the stoma is accompanied by relatively rapid emptying of the stomach, and that these cases show a perfect clinical cure, would seem to support the view that drainage is an important element in the cure of these cases.

One hundred and thirty-four patients with gastric and duodenal ulcer have been operated on by the surgical staff of the hospital since Jan. 1, 1910. A definite macroscopic lesion was demonstrated in every case of the series, and in all but one, some definite surgical procedure was undertaken for its relief.

The cases were distributed as follows:

Chronic duodenal ulcer	74
Chronic gastric ulcer	24
Gastric ulcer with hour-glass stomach	6
Perforated duodenal ulcer (acute)	17
Perforated gastric ulcer (acute)	13
Total	134

The operative procedures employed were:

Simple gastro-enterostomy for	
Chronic duodenal ulcer	72
Chronic gastric ulcer	13
Hour-glass stomach	1
Perforated duodenal ulcer	12
Perforated gastric ulcer	4
Total	102
Gastro-enterostomy with excision of ulcer for	
Chronic gastric ulcer	3
Chronic duodenal ulcer (pylorectomy)	1
Gastro-enterostomy with pyloric exclusion (secondary) for	
Chronic duodenal ulcer	1
Gastro-enterostomy with cautery puncture for	
Chronic gastric ulcer	1
Gastro-enterostomy with gastroplasty for	
Hour-glass stomach	1
Total	7
Excision of ulcer without gastro-enterostomy for	
Gastric ulcer	2
Partial gastrectomy for	
Gastric ulcer	3
Transgastric resection for	
Gastric ulcer	1
Suture of perforation without gastro-enterostomy for	
Perforated duodenal ulcer	5
Perforated gastric ulcer	9
Gastrogastrostomy for	
Hour-glass stomach	1
Gastroplasty for	
Hour-glass stomach	3
Exploratory celiotomy for	
Chronic gastric ulcer	1
Total	25

It will be seen, therefore, that gastro-enterostomy alone was performed 102 times; and, combined with some form of excision of the ulcer or other surgical procedure, except partial gastrectomy, 7 times; that is, it was the essential part of the operation in 109 cases. In the remaining 25 cases a number of different procedures were employed.

CHRONIC DUODENAL ULCER

We will consider first the results obtained in the chronic duodenal ulcers, 74 in number (72 of which were treated by simple gastro-enterostomy). Six of the patients died following operation — a mortality of 8.1 per cent. It should be remembered that this is the mortality in an unselected group of cases treated in a general service by a number of different operators, but as we are especially interested in the late results in the patients who survived, I shall not dwell on the causes of operative deaths.

Two of the remaining 68 patients died subsequently, too soon to estimate operative results — one of pulmonary tuberculosis, lighted up by the operation; one of pneumonia shortly after leaving the hospital. One patient met accidental death by drowning three and a half years after operation, having been completely cured of his gastric symptoms in the meantime.

Of the 65 remaining cases, we have been able to trace all but 7.

Fifty-eight cases are available, therefore, for a study of late results, and of these 51 patients are completely cured and free from their former gastric symptoms. Five are improved, but still have pain and indigestion at times, and two are unimproved. Of the total number of patients operated on, therefore, 68.9 per cent. are cured, and if one reckons from the number of cases actually traced, 88 per cent. have good results and 12 per cent. poor results.

Let us turn for a moment to the results of other clinics: Küttner,[2] from a study of 1,100 cases of surgical conditions of the stomach and duodenum treated in the past seven years, says that the permanent results of gastro-enterostomy for ulcer of the stomach and duodenum, including those in the vicinity of the pylorus, or at a distance from it, were extremely favorable. He gives 65 per cent. of complete cures and 20 per cent. of very essential improvement. He includes in his study, cases of active ulcer, pyloric stenosis and hourglass stomach. He also states that the functioning of the stoma was determined by late roentgenoscopy, and that it was excellent except in a few cases, which gave also unfavorable clinical results. He believes positively that gastro-enterostomy functionates in the presence of an open pylorus, and states that the findings in animal experimentation do not apply to man. His reexamination caused great doubt in his mind as to whether artificial constriction of the pylorus actually yielded better results than simple gastro-enterostomy.

He noted that in three cases of hemorrhage after operation, only one followed simple gastro-enterostomy, the other two following total pyloric exclusion, and concludes with the statement that simple gastro-enterostomy is one of the most beneficial operations known to surgery.

I have quoted Küttner somewhat fully because of the great amount of material from which his conclusions were drawn; his recognized standing as one of the ablest surgeons on the continent, and because his views express so well our own conclusions, both as to the permanency of a properly constructed gastro-enterostomy opening in the presence of a patent pylorus, and as to the favorable clinical results of simple gastro-enterostomy. Küttner attributes the favorable remote results in gastro-enterostomy to the excellent functioning of the gastro-enterostomy opening, and considers the essential feature the rapid evacuation of the stomach; which was always a marked feature in our own late roentgenoscopies.

Hartmann,[3] in an able summary of the subject presented before the last meeting of the International Surgical Society in New York, states that the widespread belief that the gastro-enterostomy opening is functionless in the presence of a permeable pylorus, and usually undergoes cicatricial closure, is a fallacy, and gives the results both of animal experimentation and roentgenoscopies to prove that when the opening

2. Küttner: Arch. f. klin. Chir., 1914, cv, 789.
3. Hartmann: Ann. Surg., 1914, lix, 835.

is at the pyloric antrum and not at the fundus, it remains permeable and functionates whether the pylorus is patent or not.

There has been a tendency by some surgeons to belittle this drainage feature, and to attribute all beneficial results to chemical changes in gastric secretions. While this undoubtedly is a factor, late gastric analyses have failed to establish very marked changes in the acidity of gastric chemistry, and such benefit as may be attributed to the chemical changes is more probably due to the fact that acid secretions remain in the stomach a shorter time and in smaller amount, than that the chemical character of the secretions is greatly changed. Also, in the case of duodenal ulcer, the gastric contents, instead of being projected in spurts directly against the ulcerated surface, leave the stomach chiefly via the stoma.

Brun[4] believes that the best results follow gastro-enterostomy at or near the pyloric antrum rather than at the fundus, and speaks especially of the "motor unrest" of a stomach with a gastro-enterostomy opening far to the left, and also in the presence of artificial closure of the pylorus, due to the constant effort of the stomach to overcome the obstruction. He believes that gastro-enterostomy properly placed gives excellent results in ulcer, and that the proper place is at or near the pyloric antrum, where the stomach normally propels the food for evacuation.

Von Eiselsberg[5] favors his method of pyloric exclusion in pyloric or duodenal ulcer, but his series, up to the time of the report (thirty-six cases) showed no better results than simple gastro-enterostomy.

Sherren[6] speaks strongly in favor of simple gastro-enterostomy for duodenal ulcer, and does not believe in excluding the pylorus. Kocher[7] also favors simple gastro-enterostomy, and believes that pyloric exclusion is not only inadvisable, but probably harmful. Pessimistic views are not wanting, on the other hand, Jianu[8] and Zweig[9] believing that the results of gastro-enterostomy are mediocre. Our feeling in regard to pyloric exclusion is based more on reports or, rather, absence of reports which would seem to prove its desirability, than on our own experience, which is practically nil. In the one case in our series (Case 1033) the patient had recurring pain and hemorrhage after pyloric exclusion, just as he had had after gastro-enterostomy, while a high percentage of the simple gastro-enterostomies have been completely cured.

In one case only of duodenal ulcer, pylorectomy was performed for multiple ulcers of the chronic perforating type, as sharp hemorrhage had occurred, and recurrence was feared. This patient, operated on only four months ago, is quite well and relieved of distressing symptoms of long standing.

For nonperforating, chronic duodenal ulcer, therefore, we believe that simple gastro-enterostomy is an effective and safe procedure, and should be the operation of choice; that there is no evidence that the addition of pyloric exclusion will give better results; that a properly constructed stoma will functionate and remain patent for years in spite of an open pylorus, and that the drainage feature of a functionating gastro-enterostomy opening is an important factor in effecting and maintaining cure of the ulcer.

4. Brun, H.: Deutsch. Ztschr. f. Chir., 1915, cxxxii, 566.
5. Von Eiselsberg: Surg. Gynec. and Obst., 1914, xix, 555.
6. Sherren: Surg., Gynec. and Obst., 1914, xix, 564.
7. Kocher: Deutsch. Ztschr. f. Chir., 1912, cxvi, 183.
8. Jianu: Wien. klin. Wchnschr., 1910, cxvi, 1223.
9. Zweig: Arch. f. Verdauungskr., 1913, xix, 740.

As in no case of this series has the patient been treated by Finney's method of pyloroplasty, I am not able to comment on this procedure from actual observations, but appreciate the arguments in its favor so well presented by Finney[10] in his recent report of results in one hundred cases.

I am also unable to comment on the occurrence of jejunal ulcer as a late complication following gastro-enterostomy, as no case of this lesion has occurred in our series, or, at least, none have been recognized.

CHRONIC GASTRIC ULCER

Our feeling in regard to simple gastro-enterostomy in gastric ulcer at a distance from the pylorus has been somewhat different. The well-known tendency of these ulcers to undergo malignant degeneration, together with the fact that a greater percentage fail to heal after simple gastro-enterostomy, has made us feel the desirability of excising such ulcers when it could safely be done.

Clairmont's statistics from von Eiselsberg's clinic[5] illustrate well the less favorable results, though many operators take a much more optimistic view, notably Sherren,[6] whose late results in a long series of unexcised gastric ulcers failed to show a single case in which carcinoma had developed.

Our series includes thirty cases of gastric ulcer, in six of which there was hour-glass contraction. The operative procedures were distributed as follows:

Simple gastro-enterostomy	13
Local excision with gastro-enterostomy	3
Local excision without gastro-enterostomy	2
Partial gastrectomy	3
Cautery puncture with gastro-enterostomy	1
Transgastric resection	1
Gastrogastrostomy (hour-glass)	1
Gastroplasty (hour-glass)	4
Gastro-enterostomy (hour-glass)	1
Exploratory celiotomy	1
Total cases	30

Six cases of hour-glass stomach are included in the series. One gastrogastrostomy patient is well, four and one-half years after operation, and a recent roentgenogram shows rapid emptying of the cardiac pouch, and a good functioning of the artificial stoma. One patient with gastro-enterostomy in the cardiac pouch soon returned without relief of symptoms, and was later lost track of. In four recent cases the patients are relieved of symptoms to date: three were treated by gastroplasty alone, one by gastroplasty with gastro-enterostomy.

Of the thirteen patients with gastric ulcers treated by simple gastro-enterostomy, two died following operation, and two subsequently; one was unimproved, and developed carcinoma a year later; one with an extensive ulcer of the lesser curvature, showed only a moderate improvement one year later and seven are entirely cured of symptoms at intervals of from five and a half years to seven months.

In the two cases of excision of ulcer of the lesser curvature without gastro-enterostomy, one patient is perfectly well two and a half years later; the other continued to have symptoms, and returned three years later with extreme cachexia and probably carcinoma.

In the three cases of local excision of the ulcer with gastro-enterostomy, one patient died after operation following secondary operation for persistent vomiting;

10. Finney: Surg., Gynec. and Obst., 1914, xviii, 273.

the other two patients—recent cases—are completely relieved of symptoms after a smooth operative recovery.

In the three cases of partial gastrectomy (Billroth No. 2) two patients are completely relieved of symptoms at two years, ten months, and three years, three months, respectively. One patient, in a difficult case of an ulcer near the cardia, died following the operation. One patient, treated by Balfour's method of cautery puncture and gastro-enterostomy, is quite well after six weeks, and in one case of transgastric resection the patient is well after three months.

Our results in this series of thirty cases of chronic gastric ulcers and their sequelae, therefore, are much less favorable than those in the duodenal group, and the series is too short, and many of the cases too recent, to make our deductions of much value.

The higher mortality of simple gastro-enterostomy in gastric ulcer was due more to the pathologic condition present than to the operative procedure, one of the two immediate deaths being in a cachectic old man with a huge ulcer of the posterior wall, and extreme cachexia, in whom I made the ill-advised attempt at operative relief by performing anterior gastro-enterostomy. The case should have been considered inoperable. Death occurred on the third day from postoperative pneumonia.

The other two deaths in the series occurred, one after local excision of the ulcer with gastro-enterostomy, the other after a difficult partial gastrectomy. Two patients died subsequently: one a year later, apparently cured of his gastric symptoms; one from pneumonia shortly after leaving the hospital.

In two cases of the series the patients developed carcinoma later, one after simple gastro-enterostomy for ulcer near the pylorus, the other after local excision of the ulcer of the lesser curvature, without gastro-enterostomy.

In seventeen of the cases the patients are well and quite relieved of symptoms, though of this number five were operated on too recently to be classed as permanently cured.

To summarize our conclusions, therefore, in regard to the treatment of chronic gastric ulcer, we believe that when the ulcer is at or near the pylorus, pylorectomy (Rodman's operation) is probably the ideal procedure; when on the lesser curvature, in the pyloric or middle third, local excision, with or without gastro-enterostomy; cautery puncture (Balfour) either with or without gastro-enterostomy; transgastric resection, or partial gastrectomy (Billroth No. 2, or Polya's method) are the procedures from which to choose, that is, some method of excision of the ulcer rather than simple gastro-enterostomy.

Of these various methods we believe that local excision, combined with gastro-enterostomy, is probably the method of choice. Local excision without gastro-enterostomy shortens the lesser curvature and causes some distortion of the stomach, and probably interferes with its normal peristalsis and propulsion of food through the pylorus. We believe, therefore, that an added gastro-enterostomy at the pyloric antrum will give better drainage and probably better clinical results.

When the ulcer is on the lesser curvature, so near the cardia that excision would be difficult and hazardous, cautery puncture, with or without gastro-enterostomy, is a valuable addition to the possible methods of procedure.

Transgastric resection is spoken of very favorably by von Eiselsberg[5] and by Kummell;[11] and in my one case of this procedure, I was much pleased both with the immediate results and the complete relief of symptoms. The case is too recent to have late results of value as yet.

When, as was the case in two of our simple gastro-enterostomies, the ulcer is too extensive to allow of resection, gastro-enterostomy can at best be considered only a palliative measure. In one of these cases, already referred to, the patient died immediately; the other showed little, if any improvement at the end of a year.

In regard to transgastric resection, Kummell[11] reports eighteen cases with two operative deaths, and speaks of it as a severe operation, remarkably well tolerated, and suitable for ulcers situated in the middle of the stomach. In nine of these cases which were followed the patients were entirely well and able to work. Von Eiselsberg[5] reports twelve cases with four deaths, and is also favorably impressed with the results of this operation. It is, however, a severe procedure, the mortality of which will probably be higher than that of local excision, with or without gastro-enterostomy.

PERFORATED DUODENAL AND GASTRIC ULCER

There were seventeen cases of acute perforated duodenal ulcer in the series, with two operative deaths, one due to subphrenic abscess and one to postoperative pneumonia. In one of the fatal cases gastro-enterostomy was performed, and was not drained (death from pneumonia). In the other, the perforation was sutured; drainage was used and no gastro-enterostomy was done (death on the twenty-second day from subphrenic abscess). No patient died of extension of the peritonitis. Primary gastro-enterostomy was performed in twelve of the seventeen cases. Two patients died subsequently, shortly after leaving the hospital; one of hemorrhage, one of pulmonary tuberculosis.

In the thirteen remaining cases, seven patients are cured and free from symptoms; three after four years, one after three years, three more than two years. Five are improved, but have more or less indigestion and pain, and one is untraced. Of the five patients who still suffer from pain and indigestion, four had primary gastro-enterostomy performed, and one a simple suture of the perforation. Of the cured patients five had gastro-enterostomy and two did not. Conclusions as to the effect of gastro-enterostomy on the permanent cure of symptoms in this group, therefore, are not of much value. It would seem fair to assume, however, that primary gastro-enterostomy in properly selected cases does not greatly increase the immediate mortality, and that it should increase the prospects of ultimate cure. None of the cases of this series, treated by simple suture without gastro-enterostomy, however, have required secondary operations for pyloric stenosis.

In the thirteen cases of acute perforated gastric ulcer, six patients died following operations, all with extensive generalized peritonitis, one having pneumonia, one subphrenic abscess, and one delirium tremens in addition to the peritonitis. Gastro-enterostomy was performed in five of the seven patients who recovered, but not in any of the fatal cases.

In acute perforation of gastric or duodenal ulcer, the choice of procedure is limited to the consideration

11. Kummell: Centralbl. d. ges. Chir. u. Grenzgeb., 1914, v. 743.

of drainage, the means of cleansing the peritoneal cavity, and the question whether or not primary gastro-enterostomy should be added to closure of the perforation.

The peritoneal cavity can best be cleansed by simple sponging and the use of suction apparatus; with the least possible traumatizing of peritoneal surfaces. Flushing with large quantities of salt solution is effective and safe if properly done, and is especially useful if there has been much escape of gastric contents through large perforations, especially of solid food particles. We flush much less frequently since the employment of suction apparatus has become a routine procedure.

Drainage may be safely omitted if the closure of the perforation is secure, and the cleansing of the peritoneum satisfactory. It should be employed if the friable inflamed tissue surrounding the perforation renders secure suture impossible; or if a localized abscess has formed. Drainage of pelvis or flanks is rarely necessary.

Primary gastro-enterostomy may be safely performed in many cases of acute perforation, especially of duodenal ulcer. It should not be performed if the condition of the patient or the extent of the peritonitis is such that the operative risk will be greatly increased.

Late roentgenoscopies have been made in twenty-eight cases of simple gastro-enterostomy, in all of which the pylorus was patent and not excluded, twenty-two cases showing excellent function of the stoma and good clinical result. Two show imperfect function with clinical improvement, but some persistence of gastric symptoms, three years and six months, and two years two months after operation. One fails to show an open stoma but the patient is free from clinical symptoms two years after operation. Another patient was well for about three years, but for the past eighteen months has had a return of symptoms and his stoma has apparently closed, four and a half years after operation.

Two patients are unimproved, one showing a functionating stoma, but also a penetrating unhealed ulcer (three years and nine months after operation); the other a closed or strictured stoma and probably an unhealed ulcer, one year after operation.

Of the six cases showing imperfect results, four were of acute perforating duodenal ulcers, and two of chronic duodenal ulcers.

Of the twenty-two cases showing a functionating gastro-enterostomy opening and a clinical cure, nineteen were of chronic duodenal ulcers; two of acute perforating duodenal ulcers, and one of acute perforating gastric ulcer. The time after operation at which the roentgenoscopies in these twenty-two cases were taken was as follows:

1 case	5 years, 1 month
3 cases	4 to 4½ years
5 cases	3 to 4 years.
5 cases	2-3 years
7 cases	1-2 years.
1 case	7 months

These findings would seem to justify the conclusion that in a good percentage of cases, a properly constructed gastro-enterostomy opening will continue to functionate in spite of a patent pylorus, and that a functionating stoma is usually accompanied by a clinical cure of ulcer symptoms. That closure or narrowing of the opening occurs in some cases is not disputed.

CHRONIC DEAFNESS

THE PRESENT STATUS OF ITS TREATMENT*

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In all the history of preventive medicine and public health, there never was a time so full of general protection of the sick and well, the weak and the afflicted, as the present. The appreciation of the necessity for the segregation of the mentally deficient, the protection of the public from those afflicted with tuberculosis and other infectious diseases, must, in time, diminish much suffering and many human ills. Prevention of inherited tendencies and bettered conditions of living are causing enormous improvement in the coming generations. All these efforts have their effect on the special senses, as indicated by the attempt to lessen ophthalmia neonatorum, the care and education of the blind and the deaf mute. Such advances in certain lines emphasize the necessity of the recognition of another class of defectives; a class, which, unfortunately, is growing. Methods of relief for this class have proved most unsatisfactory. I refer to the thousands of people who are gradually and insidiously becoming deaf; whose efficiency is lessened proportionately as the hearing lessens, and, most serious of all, whose mental activity becomes diminished, owing to the elimination of the sound of the human voice and the loss of human intercourse. A man must hear to live.

The great number of persons afflicted with deafness, especially in young and middle life, brings up the subject of the economic loss due to lessened efficiency. Holt, in an article on physical economics read before the American Otological Society, by a mathematical formula finds that the adjustment for damages for the total loss of hearing of one ear, in a man 46 years old, receiving $2 a day, is about $1,700. The question of the value of the sense of hearing is an important one, and is not mentioned in the usual accident insurance policies. One may be compensated for injuries, if such injury happens to be included in the schedule of indemnities, but loss of hearing in one or both ears is apparently considered unimportant.

Our modern life is one of ceaseless activity; strain on the nervous system is constant, and the organs of special sense, the eye and ear, are overworked. The eye receives immediate attention at the first suggestion of trouble, but the ear, on the contrary, does its work as best it may, and not until the accidental discovery that the tick of the watch or the family clock cannot be heard, or a tinnitus occurs, does the owner trouble to investigate. It is true we possess more hearing than we need in our present life. In colonial days we depended on acute hearing to enable us to hunt the deer and discover the prowling Indian; but now all that seems necessary is to be able to hear the telephone bell, and the satanic blast of the motor horn. Even the "movies" have eliminated the necessity of the spoken word on the stage. Lowered standards of hearing due to nervous fatigue and the noise of the city present a serious problem. Wittmaack and Siebenmann found by experiment that constant noise for a given length of time caused atrophy of that portion of the organ of Corti, corresponding to the location of the tone perception.

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

The development of the ear, from the simplest otic sac of the mollusk to the human ear, has resulted from necessity and environment. In the deep sea animals, the vesicle is immediately under the surface, with a differentiated and highly organized end organ. In some, there is a deficiency in the bony lamina, and the vibrations are transmitted through the skin. In others, as the cray fish, the sea water replaces the endolymph of the higher animals and the ductus endolymphaticus opens on the external surface. When life becomes more motile, semicircular canals are developed, first two and then three. In the amphibia, as the crocodile, a means of accommodation is necessary; therefore the middle ear, ossicles and eustachian tube are developed. With this newly formed apparatus come the conditions and environment which cause the greatest amount of deafness.

Theories as to the cause of interference with the normal function of hearing are many. Whether one accepts the Helmholtz theory of the ossicular chain being the means of the transmitting sound waves, or those of Mach and Zimmermann does not matter. One believes that the waves pass through the drum membrane, thence to the round window; the other insists that bone conduction is more important, and that the middle-ear apparatus is for the purpose of accommodation and any variation in labyrinthine pressure.

We know that the ordinary form of deafness is due to congestion, and from this condition an entire train of symptoms results. The thickened mucosa interferes with the free transmission of sound waves through the middle ear. Closure of the eustachian tube causes a disturbance of labyrinthine equilibrium and interference with the accommodation for lower tones. If this condition becomes more or less permanent, a chronic spasm of the tensor tympani muscle follows. The result is one which might be expected, namely, the formation of fibrous tissue, which is the last stage of all recurrent or constant congestion, whether the conditions exist in the liver, kidney or middle ear. This is the condition commonly known as chronic catarrh of the middle ear. A great many terms have been applied to the various stages, from the serous condition following a simple head cold to the adhesive type of the most advanced form. It is one and the same thing; an insidious and certain change. The future maintenance of our standard of hearing depends on the education of the public to the realization that good hearing is as important as good sight. Our duty, therefore, is to prevent deafness in the coming generation, and to alleviate the afflicted by general and local measures.

One of the most important predisposing factors in early life is the belief that a child cannot live too much in the open. In our strenuous climate of the east, much harm results from the modern method of putting babies and small children out of doors to sleep, in all kinds of weather. If, for past generations, we were accustomed to live in the open for the entire twenty-four hours, no harm would follow, but sleeping in the damp cold winds of the winter and spending the waking period in a room generally overheated, establishes conditions most favorable for trouble in the future. The child often lies on its back, with its head low; a position which favors mouth breathing, congestion of the turbinates, development of adenoid tissue and infection of the eustachian tube by gravity. I have often noticed in a certain hospital where children are obliged to remain in the recumbent position because of orthopedic apparatus, that the number of aural affections is very large, unquestionably due to the unnatural position.

As soon as possible the child should be examined by a competent aurist, and any obstructions to free normal breathing eliminated. This applies especially to removal of adenoid tissue and is of the greatest importance when it is necessary to correct uneven teeth. Operations on spurs and deviations of the septum should be postponed, if possible, until the nose has become more fully developed. The results of the examination of one thousand schoolchildren, made about ten years ago, were most instructive. In practically every case, the relation between physical condition and mental efficiency was remarkable. Children with defective respiration, and nasopharyngeal obstruction, suffered from diminished hearing, and showed a corresponding low degree of scholarship. On this examination was based the Massachusetts state law providing for annual tests of hearing as well as eyesight.

In treatment of the adult deaf, it is necessary to recognize the mentally depressed condition of the average patient, and to encourage him as much as possible, at the same time telling him the facts. The usual chronic form of deafness cannot be cured, and afflicted persons should be told so in a tactful manner. They should be encouraged to go among their fellow men and to use their ears. The tendency of the deaf person is to hibernate; to consider himself a nuisance to his friends. This worry only makes a bad matter worse. Inasmuch as congestion plays the important rôle in the cause of deafness one should first attempt to remove such condition. Constipation is the rule, and is generally marked. The effect on the congestion of the turbinates and nasopharynx is well recognized. It is likely that the absorption of toxins also affects the cochlea and auditory nerve. Motoring has become so general that a "motor ear" is of common occurrence. This condition is caused by the abnormal speed through the air, and from the irritation of dust. The old-fashioned idea of putting cotton in the external meatus is a good one. It prevents cooling of the warm air in the external meatus and thus wards off neuralgia. The use of a simple oil in the nose before going out, and a plain saline wash, after returning, is good.

Ill effects from sleeping in the open in all kinds of weather are as marked in the adult as in the child. Persons who at night have the extreme fresh-air habit, often are obliged to spend their days in close offices, or in badly ventilated and overheated rooms; they wonder why the nose is usually closed and breathing difficult. When one sleeps the circulation is at its lowest ebb. The body is recumbent, and during respiration the nasal mucous membrane and the turbinal tissue hypertrophy in order to warm the abnormally cold damp air. After a time the swelling becomes permanent, and a chronic passive congestion and a hypertrophic rhinitis result. We should have plenty of fresh air, but it is not necessary to sleep in a wind to get it. The head should be protected from drafts and a pillow used. Our forefathers used pillows, and high ones too; it is to be remembered they had fine figures and flat backs.

Another cause of congestion to be overcome is the use of tobacco. There is no question but that it is a great factor in the decrease of hearing, not from the absorption of toxic agents alone, but from the local

irritation of the heat and volatile substances in the smoke. Alcohol, too, should be eliminated. It is, of course, difficult to persuade the average man to give up the habits of years, but the facts should be explained to him fully, and he must take his choice. Diet and exercise should be prescribed just as carefully as though a heart or a kidney were involved. The occupation of the patient should receive attention, whether his environment can be improved and predisposing factors to deafness overcome.

In the local treatment the attempt should be made to deplete the mucous membrane of the nose and pharynx, to remove points of contact in the nose and to cure absolutely any and all accessory sinus disease. So many able writers have dwelt on these conditions, that it is only necessary to mention a few special points. Contact between the septum and a turbinate may not cause a congestion, but a reflex spasm of the tensor tympani muscle. The retraction of the drum might be due largely to such an action rather than to a closure of the eustachian tube alone. It is a well-known clinical fact that monaural deafness often improves after such contact is removed. One should not destroy turbinal tissue if it is possible to deplete by mild applications or other means. This is especially true in young women. In later life when an atrophy naturally occurs, the apparently excessive turbinal tissue is needed.

Yankauer has conferred a great benefit on otology by reinstating the use of the bougie, which had been to some extent discarded. The treatment is greatly facilitated by his system of graded sizes and method of application. This form of treatment gives more relief than others at our disposal. The time-honored inflation has its place, but the danger of its abuse is great, and the direct benefit only transient. After the use of the air bag or catheter, while the drum membrane remains tense, there may be an increased clearness of the hearing, due to the slight improvement in accommodation and the relief of the excessive intralabyrinthine pressure. It has never seemed possible to exert any appreciable effect on the strong tensor tympani muscle, which after all is an important cause of the retraction, or on an ankylosis. If the middle ear needs air the trouble is in the tube or the nasopharynx, and the cause should be treated. If the eustachian tube is patent, then inflation to any great extent must destroy what little accommodation still exists. It too often occurs that the aurist does not know what else to do. He inflates and continues to inflate, with no appreciable improvement in the hearing. The practice of some aurists of teaching the patient to inflate by the Valsalva method, or of prescribing the use of the air bag at home, is likely to do more harm than good.

Bougieing, with the application of astringents, and attention to the nasopharynx, should be continued until all possible improvement in hearing is obtained. In the more advanced form of deafness the fibrous stage is reached. Hypertrophy has given place to atrophy. The eustachian tube and nasopharynx are negative; the hearing does not vary with the weather but does vary with physical fatigue and worry. The drum membrane may be retracted and thickened, and the degree of deafness is most marked. This is the hopeless stage, the damage has been done and help is almost impossible. Deafness in this class of cases is due to fixation of the stapes and thickening of the membrane of the round window. A most discouraging factor is the possibility of an atrophy of the organ of Corti and other cochlear changes, as shown by Manasse. Whether these changes are due to long continued increase in the labyrinthine pressure or to disuse, is not known. One can see how impossible it is to improve such cases. Fibrous tissue cannot be changed by any known method.

The fact that the treatment of the chronically deaf is so discouraging, and the realization of the great increase in the number of those slightly "hard of hearing," lead to the investigation of the various methods of electric treatment. The customary form is the high frequency, applied with different kinds of electrodes. This current was tried on a few patients, and while there seemed to be an improvement it was not permanent, the effect being that of a nerve tonic, which did not reach the cause. The problem was to stimulate the atrophied and disused intratympanic and tubal muscles, with the hope that not only some latent accommodation might be awakened but also that a slight effect upon adhesions might be produced. The sinusoidal current was selected. This current is an alternating current, but differing in that the increase from neutral to its maximum and to neutral again, is very slow and gradual. It does not tetanize a muscle by rapidity of alternations as in a galvanic, but causes actual muscular contractions, as in normal exercise. The number of movements per minute and the length of time necessary for treatment, will have to be determined by experience.

A fair number of patients were treated by this method, from the moderately affected to the very deaf. The results were encouraging, not that there was a marked change in the actual hearing distance, but an increase in the acuity and more ease in the differentiation of words. The reason for mentioning this form of current in the treatment of deafness is largely theoretical, in the hope that some may be interested to investigate its merits further. Any addition to our present unsatisfactory armamentarium should be welcomed.

390 Commonwealth Avenue.

ABSTRACT OF DISCUSSION

DR. H. B. GRAHAM, San Francisco: Undoubtedly the treatment of all these patients depends entirely on the pathology, as Dr. Walker has brought out. The work of Siebenmann and Wittmark is directed along the line of grouping them in such a way that we can say what will be the prognosis. The work of Siebenmann that I saw in Boston certainly was fascinating. He gathered together a number of ears of rabbits, placed them in kettles and subjected them to different sounds, and then studied the process of degeneration in the cells of the labyrinth. It is remarkable the results he got with a very small amount of trauma over a short period of time, showing us that undoubtedly human beings who are subjected to these unnecessary noises are subject to degenerative processes in the labyrinth itself from which they do not recover. Anything that we can do as a preventive measure in the line of quieting a part of these noises around us undoubtedly will help in the prolongation of the use of the ear for us.

DR. HARRY L. POLLOCK, Chicago: I was somewhat disappointed that the doctor did not give us the treatment. During the last year I have undertaken to study these nonsuppurative cases of chronic deafness in which nerve degeneration has been excluded, and also cases of otosclerosis. In the beginning these cases of chronic deafness are usually brought about by some irritation of the nose and nasopharynx, and after the removal of adenoids, tonsils, spurs, etc., we may find that the condition was too far

advanced to allow improvement of the condition of the hearing. I find that advanced cases that come to the otologist practically all come with an open tube. The main trouble in these cases is on account of the bands and adhesions that occur in the middle ear. Duel found that the negative galvanic current would dilate the tube in these cases in which the tube was occluded or stenosed; with the apparatus devised by him the application of the negative current with the positive in the hand would dilate the tube and give good results. A few years later Yankauer gave us tubes and brushes for the middle ear. We tried this method and obtained results, but they did not reach the trouble in the middle ear. Knowing the affinity of the positive electrode for iodin, I figured if I could get iodin into the middle ear I could absorb these bands and get a return of hearing. So I had an ear speculum made, attached to the negative pole. I used a copper bougie electrode through a eustachian catheter. Into the speculum connected with the negative pole I placed a saturated solution of potassium iodid, and turning on the current very gently I found I could draw the released iodin to the middle ear. The results, however, were not very startling. I am still working with it and expect next year to give a report on these cases.

DR. HENRY HORN, San Francisco: In spite of the fact that chronic catarrhal deafness is the most common condition which we have to treat, we will never come to any definite conclusions until we can correlate the results of many different observers. You all know the extremely unsatisfactory results that were obtained by the use of fibrolysin in the treatment of middle ear conditions. There were various reasons for the failures, but theoretically it seemed as if the idea might be of value. The following treatment has proved rather satisfactory in my hands. I have used in six cases a bismuth salt of fibrolysin and, eliminating the mental element to the patient and myself, I can safely say that there seems to be something in the use of this preparation, given over long periods, which improves tinnitus and the hearing.

DR. D. HAROLD WALKER, Boston: My chief reason for bringing the paper before the section was to suggest a method I am trying now, the sinusoidal current. While I am not prepared to give conclusive results, I hope that some of you will be interested in it. Thirteen or fourteen out of twenty cases have been improved as far as their hearing more distinctly is concerned. Some patients who are just deaf enough to miss a word here and there have been made more comfortable.

"Patent Medicines" and Infectious Diseases.—An epidemic of diphtheria in Ottawa, Canada, recently was believed by the board of health to have been fostered by the use by the public of a "patent medicine" called "Diphtherine," advertised as a cure for diphtheria. In this epidemic, 414 cases occurred in six months. In commenting on this, the *Canadian Medical Association Journal* (July, 1915) says that the sale of "patent medicines" professing to cure infectious diseases should be prohibited by law, and that the use of such a nostrum for the cure of infectious diseases must inevitably result indirectly in the spread of such diseases. Laws are made for the reporting of infectious diseases, but the duty of making such report is laid on the physician who discovers such infections. It is said that the chief value of a "patent medicine" in the eyes of the layman lies in the fact that it enables him to dispense with a physician, and therein lies their viciousness with reference to the infectious diseases, even though they contain no dangerous ingredients. Though the latter may be insured by government regulations, when the use of such nostrums endangers the health of the community at large, this is not sufficient; the evil effects of the use of such nostrums as "Diphtherine" in defeating the laws aiming at the protection of the public by control of infectious diseases must be taken into account. The promoters of "Diphtherine" even have the assurance to undertake to instruct the public how to diagnose this deadly disease, diphtheria.

SUBINFECTION FROM FOCI IN THE PELVIS AND ABDOMEN *

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Much detailed study, both clinical and bacteriologic, has resulted in establishing many important facts relating to general infections of mouth and tonsil origin, while little, very little, appears to have been given to like pathologic processes of pelvic and abdominal origin.

Perhaps an exception may be made of acute general infections, such as follow mechanically induced abortions, gonorrhea, etc., though there is still much to be learned about their bacteriology and routes of diffusion; the phenomena of arrest in the lymph nodes and in certain organs like the liver and spleen, and the vital processes by which such infections are combated and immunity is established.

Chronic infections from local foci in the pelvis and abdomen, or as Adami prefers to call them, subinfections (and toxemias caused by toxic products liberated by the death of the organism), have failed to receive the attention their importance merits.

Sir Arbuthnot Lane has drawn the attention of the medical world to what he calls autointoxication of intestinal origin, and he aims to cure the condition through a total extirpation of the colon. His work and conclusions, however, appear to have been based in the main on clinical data with what, in this generation of laboratory requirements, would seem to be insufficient checking with systematic bacteriologic investigations of the primary source of the disease or of the carriers of the "toxin"; the blood and lymph and the vessels and organs through which they pass.

Lane's reasoning and results have, therefore, failed to convince many surgeons that the hazardous operations he advocates are justifiable for the relief of the various, often trivial, and far too numerous diseases and symptoms he cites as curable by short circuiting and colectomy and, happily, humanity has been spared the indiscriminate adoption of a practice which would inevitably be disastrous if generally accepted and applied.

Of this Adami says, "It is, I hold, too grave a responsibility to assume, this of starting an epidemic of operative surgery purely upon an empirical basis, on a foundation that is not established upon uncontrovertible fact."

The acceptance of Lane's theories as to the causes of many of the diseases he attributes to colonic stasis implies the acceptance of the theory of the permeability of the normal colon by pathogenic organisms; a theory which would appear to have been clearly disproved by Neisser, who asserts that "the importance of the intestine as a portal of entrance for bacteria has been greatly exaggerated." He further says, "It has been shown that under certain *pathologic conditions* some bacteria may enter the blood stream through the intestinal wall as, for instance, anthrax, tubercle bacilli, typhoid bacilli and some of the colon group. Some authors have assumed that such a passage of bacteria through the intestinal wall may take place under normal conditions or when there are only slight changes, such as venous congestion. Attempts have

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

been made to explain many diseases whose etiology was not clear in this way." Neisser reviews the literature and gives a bibliography of seventy-five titles. He describes experiments of his own, which show that under normal conditions bacteria do not pass through the intestinal wall either into the blood or lymph circulation. In contrast with Nocard's results, he found that after bacteria were given to animals, both the chyle and the mesenteric glands were completely sterile. He found also that the chyle has no bactericidal qualities.

As gynecologic and abdominal surgeons we are more often and more directly interested in the invasion and diffusion of pathogenic bacteria through damaged tissues such as may be found following more or less acute inflammatory processes involving the fallopian tubes, the appendix, the stomach and duodenum, and the gallbladder. During the process of recovery such infections are accompanied by partial immunization on the part of the patient, a reduced virulence on the part of the pathogenic organism and by an effort on the part of the surrounding tissues to isolate, encapsulate or encyst the local focus of the disease.

This encapsulation, if ultimately accomplished, is brought about through a quarantine fibrosis by the adjacent tissues, but before this quarantine fibrosis is complete, and indeed to some extent afterward, there are leaks, and many organisms escape into the circulation, and there is in consequence a more or less prolonged period during which such pathogenic bacteria are taken up by the blood and lymph vessels and are carried to other portions of the body to form new foci by metastasis or to create new lesions in the tissues about certain terminal vessels, as in the heart, kidneys, brain, gallbladder, stomach and duodenum.

In the light of what is now known of general systemic infections from foci in the mouth and tonsils, every gynecologist and abdominal surgeon of wide experience can look back over his past work and recall a vast number of instances in which he has been able to cure such chronic, or subinfections, by the removal of some old focus in the pelvis or abdomen. The removal of old tubo-ovarian abscesses, a "chronic appendix," a thickened, contracted or strawberry gallbladder, has been followed by a restoration of general health and well being. With the analogy of the infections from the mouth and tonsils an open book before us it seems quite clear where and how the illness of our patients may have originated. We must not, however, be content with inferences and deductions from comparisons. We must know and we must know with the certainty that can come only through the bacteriologic study of specimens removed at operation, and of the blood and the lymph glands of such patients. The bacteriologist must work with the surgeon and the surgeon must work with the bacteriologist to solve these problems.

Billings enumerates the common systemic results of focal infection as follows:

1. Chronic arthritis as one of the most common.
2. Nephritis, both acute and chronic.
3. Cardiovascular degenerations.
4. Chronic neuritis and myalgia.

He cites among other local foci of infection, chronic ulcers of the gastro-intestinal tract, chronic appendicitis, cholecystitis and cholangeitis, and the genito-urinary tract. He says of chronic catarrhal appendicitis that it may produce not only the local discomforts, including disturbance of the functions of the digestive organs, but it may also be a focal source of systemic infection with the damage done chiefly to the cardio-vascular apparatus.

It was such a case as the preceding paragraph refers to that recently attracted my attention anew to this subject and inspired this paper. I venture to give a brief history of the case.

The young man had long been a patient of Dr. S. G. Bonney. Dr. Bonney had seen him through several severe attacks of diffused systemic infection of primary tonsillar origin with severe local manifestations in the heart, pleura, kidneys and appendix. A detailed history as to his early cardiac complications may be found fully set forth in Bonney's "Pulmonary Tuberculosis and Its Complications," pages 499, 500, 501. The transcript of the history of this case as given to me by Dr. Bonney for this paper is as follows:

A tonsillectomy was recommended for a delicate child of 8 years with a history of repeated attacks of acute tonsillitis. The operation was done while visiting in another state, but on return to Colorado it was found that the tonsillar tissue had been but partially removed. The operation was in no sense a success, for subsequent acute attacks took place. When 10 years of age the first serious systemic complication was experienced.

During the ensuing few years he experienced several acute illnesses characterized by fever, pain in the joints, dilatation of the heart with endocardial murmurs and rapid pulse, these attacks occasionally being preceded by a mild tonsillar infection. Three years ago it was decided to have the tonsils thoroughly enucleated under a general anesthetic, notwithstanding the fact that the heart at that time was not in an entirely satisfactory condition, the pulse being rapid even when at rest and the heart murmurs persisting. There was also a slight nephritic involvement as evidenced by a trace of albumin with hyaline and granular casts. He was kept in bed for several months after the operation, following which the albumin disappeared, as well as the casts, and the evidences of kidney irritation have never returned.

In April, 1912, he went to Kentucky and Tennessee, remaining one year and two months, apparently in a very satisfactory condition, but in March, 1913, again experienced an acute illness reported to have been characterized by acute pains in several of the joints suggesting what had been previously regarded as acute articular rheumatism (undoubtedly an acute infectious arthritis). He remained in bed from March until June in the South, developing in the meantime an acute pleurisy with effusion *and a very severe appendicitis which was regarded as inoperable on account of his heart trouble.*

He was brought home in June, 1913, apparently hopelessly ill. There was great prostration and emaciation with daily fever of 101 to 102, marked dyspnea, dilatation of the heart and a double mitral murmur. He remained in bed for many months, I should judge at least six, the chief features of treatment being absolute and complete rest, and efforts to promote elimination in every possible way, together with supporting measures, careful attention to diet and stimulation.

He made a very satisfactory improvement and was finally able to be about without noticeable shortness of breath until an acute attack of appendicitis developed in the summer of 1914. Immediate operation was performed by Dr. Wetherill and the subsequent course has been satisfactory beyond measure. He has never had an ill day since. There has taken place a very substantial gain in weight, the pulse is uniformly slow and of good character, the color of the face is better than for ten years, there is no shortness of breath even on considerable exercise, there is no dilatation of the heart. There still exists a faint but distinct endocardial murmur with satisfactory compensation of the cardiac insufficiency.

My operation for the removal of his appendix was done July 26, 1914. The patient was then 18 years old. The attack was so severe that immediate operation was deemed imperative notwithstanding the bad condition of the heart. Every preparation was made for rapid work and the anesthetic was carefully given. The appendix was found gangrenous and covered with lymph. It was enveloped in a mass of old adhesions made up of the omentum and other adjacent tissues. Following my practice in such cases, no intraperitoneal drainage was used, but an ample drain was placed through the superficial tissues down to the peritoneum. The patient made an exceptionally smooth operative recovery and, as stated by Dr. Bonney, had been in excellent health since. Taking the history of the case and the findings at the operation together, it is probable that this old focus about the appendix was responsible for maintaining the systemic intoxication and infection.

Such an endocarditis as was present in this instance, originating through systemic infection from a focus which provided constant though minute doses of pathogenic organisms, and which is at once improved after the removal of the source of the infection, leads one to speculate whether most of such remote lesions are not truly embolic in origin.

If possible it must be determined also whether in such a case as this, for example, the infection of the appendix was primary in the appendix or whether it was due to, or coincident with the early attacks of tonsillitis for which the tonsils were removed and to which the early cardiac symptoms were attributed, or whether the infection of the appendix was secondary and possibly embolic from the tonsil focus.

It now seems highly probable that the transfer of many pathologic processes from one part of the body to another, which we have called metastases, are in truth a conveyance of the causal agent—the pathogenic bacteria—through the blood vessels, with their arrest in clumps or as individual organisms in the terminal vessels and the tissues surrounding them, constituting infective capillary emboli such as are found in pyemia and so-called ulcerative endocarditis from the *Streptococcus viridans*.

In confirmation of this theory Rosenow has demonstrated that the reason why acute rheumatic endocarditis originated only in youth is purely anatomical. The typical verrucose endocarditis of acute rheumatism is, he claims, of embolic origin and can be induced by inoculating half grown rabbits with streptococci of a grade of virulence closely allied to that which in older rabbits will induce myositis. Why the older rabbits do not suffer from endocarditis is because the heart valves have become nonvascular, the fine arterioles present in early life in the proximal two thirds of the cusps undergoing obliteration.[1]

In all probability similar vascular changes explain the incidence and location of rheumatoid changes at different life periods.

The application of such facts as are here set forth to the common types of neglected sources of infection in the pelvis and abdomen, must of necessity awaken all of us to a fuller realization of the possibilities of such local foci as causes of some of the subtle and intractable constitutional conditions presented by many of our patients.

The practical result of such application will be that no investigation of one of these cases of chronic systemic infection can be regarded as complete till all possible sources of focal infection have been investigated, which will include with the mouth and tonsils all other lymphoid masses, such as the appendix; and in adults, the genito-urinary organs, including the seminal vesicles, the gallbladder and the stomach and duodenum.

E. C. Rosenow has experimentally produced ulcers of the stomach in rabbits and in dogs by the intravenous injection of certain strains of streptococci. He has made cultures from gastric ulcers in man, and in two of these ulcers he has found streptococci, taking them from the depths of the ulcer, which leads him to believe in the possibility of such ulcers being infectious in origin. In the animals in which these organisms produced ulceration of the stomach the most common associated lesion was a cholecystitis and beginning gallstone formation.

As gynecologic and abdominal surgeons we must be interested in this pathologic problem in all of its aspects for it is now quite certain that infections may be carried by the blood to the pelvic and abdominal viscera from focal infections in remote parts of the body, as the mouth and tonsils, and, on the other hand, it is equally certain that general systemic infections with embolic lesions all over the body may originate from local foci, more or less chronic or latent in character, in the abdomen.

Rosenow has recently conducted a series of experiments which appear to prove that appendicitis is very often the result of a secondary hematogenous infection from a distant focus like the tonsil.

This conclusion would seemingly be confirmed by the almost epidemic character of acute appendicitis during periods of prevalence of influenza, tonsillitis and grip, so that clinical confirmation of his theory of the etiology of the disease may perhaps be conceded.

The acceptance of this theory of the origin and mode of transmission of infecting organisms from the throat to the appendix by an embolic process and their lodgment and multiplication in the lymphoid tissue of the appendix, for which they may possess a sort of elective affinity, is not in the least incompatible with the contention of this paper, that is, that such a new secondary focus, once established in or about the appendix, may, if not dealt with surgically, be a source of serious and widespread systemic infection; as apparently happened in the instance quoted in this paper.

Lubarsch's most recent studies show that micro-organisms may lead a latent life for a long time until trauma or inflammatory hyperemia makes it possible for them to produce a typical disease. A great number of infectious diseases are of endogenous origin, that is, the micro-organisms were present in the body for a long time before the outbreak of the disease.

Latent, encysted and encapsulated focal infections such as are commonly found about the appendix and fallopian tubes are not to be regarded as free from danger even if no new activity occurs about the seat of the infection.

The clinical histories of such cases are rich with evidence that points to definite damage to remote organs, and to symptoms associated with the circulatory, renal, muscular, nervous and digestive systems which may be attributed to minute though constant hematogenous infections and intoxications from such foci, and which are cured by the removal of the supposedly latent or encysted and partially quarantined focus. One need only suggest to this section a review

1. Adami: Colorado Medicine, February, 1914, p. 47.

of our rich experience with the innumerable ills of those women on whom we have operated for old pelvic mixed infections, which were primarily due to the invasion of the oviducts by the gonococcus or streptococcus, followed by colon bacilli and other groups of organisms which have availed themselves of the damaged tissues to gain a foothold. Such patients may not be cured of old organic lesions, of arthritic changes, of established nephritis, etc., but the constant and persistent subinfection may be arrested and further organic changes may be prevented. You have seen many such patients gain weight, lose their pasty complexions and grow rosy and improve in general nutrition and good health after operation. The same improvement may be seen following the removal of an old infected appendix or gallbladder, even though the disease in those organs be secondary to a primary focus in the tonsils or elsewhere.

An acceptance of Rosenow's conclusions as to the hematogenous origin of many if not most of the infections of the appendix leads to the query whether any of the abdominal and pelvic foci from which systemic infections may arise are primary portals of entry, excepting, of course, those of the genital tract.

With hematogenous infections of the kidneys we have long been familiar and we are quite prepared to accept the theory of hematogenous origin for infections of the gallbladder, stomach and duodenum. Foreign bodies in the appendix, though rarely present, may make it vulnerable to the colon bacillus and other intestinal organisms, but its lymphoid elements certainly predispose it to selection when the blood is carrying to it and through it pathogenic organisms from another source.

If then, with the exception of the genital tract, we concede that infecting foci within the abdomen may in many if not in most instances be secondary to some other (primary) focus, a broader and more comprehensive study of such cases is imposed on us.

More thorough and more complete physical examinations must be made to exclude all other possible sources of disease, careful blood studies and cultures are required and the cooperation of other clinicians and of laboratory experts is necessary, for while the elimination of a secondary abdominal or pelvic focus may be accomplished by operation, the primary portal of entry, if one still exists, must be found and eliminated also.

Taking Billings' enumeration of the common systemic results of focal infections of mouth and tonsil origin, and comparing them with such systemic symptoms as may be clinically attributed to foci in the pelvis and abdomen, we find all of them to be common sequelae of such abdominal and pelvic foci. The subacute and chronic arthritis of gonorrheal and streptococcic origin is common, nephritis and cardiovascular degenerations are frequent and chronic neuritis and myalgias are the habitual and stereotyped complaints of those patients, especially women, who come seeking relief from old pelvic and abdominal infections.

That we as clinicians and as abdominal surgeons must accept the analogy and give greater attention to this phase of the work in our chosen field, that we must acquire a new pathologic conception of the origin and distribution of many such infections, and that we must work in closer cooperation with the bacteriologists and internists will now be quite clear to us all.

More frequent and more exact cultures from foci of infection found in the pelvis and abdomen and more frequent and more exact blood cultures must be made.

Acting on the suggestion of Rosenow we must cooperate with the bacteriologists in an effort to confirm our clinical convictions. The days of surgical empiricism and speculation have passed. Every pathologic theory and belief must be submitted to the acid test of proof.

310 Metropolitan Building.

ABSTRACT OF DISCUSSION

DR. CARL H. DAVIS, Chicago: During the past two years Dr. Rosenow and I have been working on ovaries in connection with the work which he had done before in the other lines of focal infection. Our results at present are not correlated for publication, but will be published some time this summer. Some of the cases have been extremely interesting.

One patient, an unmarried woman of about 35, had been operated on some five years previously by Dr. Webster. One ovary was removed and the other ovary resected. A short time after the operation she began to have symptoms even more severe than before the operation. Last year she came back for a second operation and the remaining ovary was removed. Cultures from this ovary gave a pure culture of streptococci in large numbers, and following the operation she had complete relief from the symptoms. Another case shows the probability of a hematogenous infection. It was that of an 18-year-old girl who had marked pelvic pains with a congenital malformation. The cervix was not connected with the vagina and was only connected with the body of the uterus by a fibrous band; yet she had a pure culture of streptococci. Another case worked out more recently, and one in which we will be unable to judge of the results at the present time, was a patient of Dr. Billings. This patient has arthritis, and the teeth and the tonsils and all the other sources had been carefully studied and eliminated. She was operated on by Dr. Webster because of some pelvic condition and an ovary removed. This ovary was studied and a pure culture of streptococci obtained in large numbers. Experimentally Dr. Rosenow was able to pass it through the blood of an animal and produce results in the ovaries of the animal tested.

DR. ALFRED B. SPALDING, San Francisco: Dr. Wetherill suggests to the abdominal surgeon a subject well worthy of consideration. Focal infections, however, work both ways. An infection of a tonsil or the teeth will at times complicate an abdominal infection. A particularly bad streptococcus infection of the tonsil brought this subject very forcibly to my attention some months ago by losing a patient from an acute streptococcus infection of the abdomen following an operation for prolapse of the uterus. The patient was operated on the day after coming to the hospital.

At necropsy there was found a pure streptococcus infection of the bladder, which caused the death of the patient. In reviewing the history it was found that this patient suffered from an attack of tonsillitis some weeks before. She had following this a slight attack of cystitis, which was treated by her physician, and apparently cured. She then came to San Francisco on account of her prolapsed condition. Unfortunately, her history of recent tonsil infection was overlooked.

Mental Laziness.—"Mental laziness" is an easily acquired habit for the tired busy practitioner, and some stimulus is needed to arouse him from his intellectual hebetude; success in practice mitigates too often the pride in exact thought and his ambition may even reach the stage of "getting by" with his professional duties, and declining to become interested in the definite problems that may present themselves.—Everett A. Bates, M.D., *Boston Med. and Surg. Jour.*

THE HOSPITAL INTERN YEAR AS A REQUIREMENT FOR MEDICAL LICENSURE

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In 1890, I was among those who took the first required course in pathology in the first required third year at the New York College of Physicians and Surgeons. Previous to that time, the medical curriculum consisted of two years of systematic lectures on the five "big" subjects, together with brief discussions of various minor topics. The introduction of a third year permitted the addition of several new laboratory and clinical demonstration courses. We were nervously tried out in a chemical laboratory reviewing many of the test-tube reactions which most of the college graduates had studied under far better auspices as sophomores. Additions were made to the lectures in physics, but this subterfuge did not suppress the indignation which most of the students felt against didactic drilling in this laboratory subject.

In physiology we strained our eyes from a back row of hard benches at half dissected calves, dogs and cats, purporting to demonstrate the mechanisms of the living body. Pharmacologic preparations were lazily passed around the class to the dreary hum of endless didactic lectures compiled from books on materia medica. There were 250 of us and at least one drug for each, but a pharmacologic laboratory demonstration had not been heard of. Many students never attended lectures, and some openly declared it was not worth while. Copies of the lecture notes commanded a ready market.

Not the least depressing influence was the shocking illiteracy of not a few of the lecturers, which was in striking contrast with the dignity, force and careful preparation of a few distinguished men who labored in vain to teach medicine by precept. The only serious instruction was purchased outside among a group of quiz-masters who had brought the art of cramming to the very zenith of perfection.

The third year had long been talked about, and when it came it was immediately packed full of subjects that had been clamoring for recognition. The class of '91 profited immensely by required courses in physical diagnosis, bedside clinics, obstetric work and close-range demonstrations in some of the specialties. We felt, and the faculty believed, that at graduation we were in a comparative sense real doctors.

But it soon became apparent that if any real knowledge of the medical sciences was to be gained by the student, the didactic lecture had to be replaced by laboratory demonstrations. Bacteriology had been completely overlooked in the new curriculum. This science was regarded as wholly ornamental to the practitioner, but the idea having taken root that the student must know something about the etiology of disease, bacteriology had to be squeezed in somewhere. Finally the clinical departments made more and more urgent demands on the laboratories for systematic help in the laboratory diagnosis of disease, which threatened to convert science departments into mere clinical adjuncts. In 1897, I had the pleasure of organizing a course of clinical microscopy which temporarily satisfied these demands and divested the course in pathology of the honor of analyzing blood, urine and sputum. With increasing efforts to really cover the accepted list of essentials, the curriculum was now full to the bursting point, and the inevitable fourth year was soon added.

With its advent came the first serious effort to train the undergraduate to recognize and treat disease in the living, and the success attending this effort in the last fifteen years has been the most notable achievement in medical education in America. After passing through many phases and experiments, clinical teaching has apparently settled on the system of clinical clerkships in an active hospital as the most efficient method of training practitioners. In adopting the plan, the university medical schools have endeavored to assume full responsibility of making this fourth year a period of systematic instruction and not a trial term of service to a hospital.

During all this long period of the development of clinical instruction, laboratory educators have looked on with approval or given their active cooperation. While recognizing certain defects in the clinical clerk system from the point of view of efficiency and concentration, the prime necessity of making students reasonably competent to recognize and treat disease has outweighed every other consideration.

Yet laboratory teachers have long felt that there is a growing disproportion between the student's real acquaintance with disease and his facility to arrive quickly at a diagnosis of the sick and to apply stated remedies. They have felt that the training of a practitioner is a life work and not a function of curriculums, and they believe that the value of clinical experience after a certain time depends wholly on the breadth of theoretical knowledge of disease. They observe with dismay the contempt which the average graduate shows for anything he cannot see with his eyes, hear with his ears, or do with his fingers.

While watching the remarkable development of many new branches of medical science, as bacteriology, chemical pathology, immunology, and the immense additions to our knowledge of hygiene and preventive medicine, they have said rather little of the genuine demand of these subjects for recognition in the curriculum. They marvel at the scope of such a program as that of the Fifteenth Congress of Hygiene and Demography, while observing that practical medicine is becoming largely a system of therapeutics. They have long cherished the hope that the foregoing and many other subjects which belong in the training of an educated physician might sometime find a place in our educational schemes, but it has been fully recognized that that time can come only when a fifth year is added to the medical curriculum.

It is with astonishment, therefore, that many laboratory and other medical educators have observed the sudden development of a scheme to add a fifth and wholly clinical year to the curriculum without any consideration of the needs of medical education as a whole. It is difficult to say just how this movement originated. It was for a time discussed in the Council on Medical Education of the American Medical Association but was not endorsed by that body. It has gained much headway in the West, and the state of Pennsylvania has already been induced to adopt the requirement of one year's residence in a hospital as a condition of medical licensure. It is certain that no general discussion of the plan by representative schools of the country has ever taken place. A circular of

information issued by the Committee on Pedagogics of the Association of American Medical Colleges in 1914 revealed a curious conglomeration of opinion, including complete endorsement, feeble acquiescence, total unfamiliarity, curt disregard, and forceful disapproval. It is now clear that the adoption of the scheme was hasty and imperfectly considered, but since we are told that the fifth clinical year is coming to stay, it is time to consider carefully its merits and demerits.

I myself believe that the general adoption of a fifth clinical year, as it has been established in certain localities, is not for the best interests of medical education and would create a serious menace from which the American profession would find it difficult to recover.

1. From the educational standpoint it is a tactical blunder for university trustees to relinquish their control of any part of medical education. The states have entrusted to them this function. They have made enormous outlays to meet the responsibility, and the states, unless ill advised, will not repudiate the contract. Yet few schools can provide clinical instruction by their own officers for their own purposes in their own hospitals. Assuming that outside hospitals are of a high order of efficiency, the university school should not turn over to any merely affiliated organization the finishing process in medical training.

2. To place the student at the service of a hospital with definite routine duties to perform in the interests of the hospital is to introduce an unsound educational principle. This difficulty will not appeal to the practical man, but it has been considered by medical educators. The University of Chicago has devised a fifth hospital year as far as possible in the interests of the student, but I fear that even such a carefully guarded practical course cannot be made as effective as a well planned course of genuine advanced university instruction freed from the necessary restraints and accidental interruptions of hospital routine.

3. We have thus far assumed that hospitals are ideal places for conducting medical education; but they are not, and much remains to be done before they can be made such. The hospital is conducted for the benefit of the patient, and it has taken a long campaign to secure the admission of students to most wards. With rare exceptions, the discipline of hospital life is far removed from the careful adjustment of means to ends that dominates university education. On this account, many would admit that a compulsory fifth year should be attempted only in university hospitals; but the adoption of the scheme cannot contemplate any such restriction. It involves consigning some students to some hospitals where the training is quite as likely to harm as to benefit. In Pennsylvania this dilemma has been boldly met by an energetic effort to standardize the hospitals of the state. This is not a small undertaking, and the acknowledgment of its necessity demonstrates the blunder of hasty action in adopting the compulsory clinical year. The hospitals should be made fit before the students are forced into them. It might also appear that much meddlesome interference with the sound development of many struggling institutions, created for local needs, may be exercised by a hospital inspector who arbitrarily demands that every institution receiving interns should provide pathologic laboratories and maternity services. It may very well be better for many institutions to contract for outside pathologic talent, while the best interests of obstetrics are unquestionably served by special obstetric hospitals. The Pennsylvania plan of standardization of hospitals conflicts with the proper development of medical specialties.

4. The surrender of the fifth year to hospitals places undesirable influence in the hands of hospital attendants who cannot qualify for positions on a university faculty. It is not so long since control of a clinical service could purchase a place on a university faculty. It is unnecessary to rehearse the long chapter of medical politics which surrounded the period when prominent hospital attendants controlled medical faculties; but those who have lived through that time do not want to return to the old régime.

5. It is proposed that those students who do not intend to practice medicine may substitute a fifth year in some laboratory. They may do so now, but it is quite clear that if the license to practice depends on a fifth clinical year, it will be much more difficult to induce men to enter laboratory careers. Few students are willing at the outset to abandon the right to practice medicine. The small proportion who might engage in a fifth laboratory year and furnish recruits for the medical sciences will be compelled from a reasonable regard to their natural privileges to decide to take the extra clinical year, after which they will be much less inclined to go back to the laboratory. This highly unfortunate result appears to many laboratory teachers as one of the most serious objections to the compulsory clinical year. Additional difficulties arise if the student desires to pursue postgraduate instruction in another state or another country.

6. It is urged that from 50 to 100 per cent. of the graduates of many schools already take a fifth or a sixth clinical year, so that the requirement of this service will work no hardship. To the same extent it will accomplish no good. More men will take hospital training when their means and time permit and their judgment approves, and when the attractions of hospitals increase; but all the arguments that are raised against prolonging the period of professional training tell with special force against the compulsory practical fifth year.

7. The chief objection to the fifth clinical year lies in the excessive emphasis it places on clinical training and the relative subordination visited on the fundamental sciences and on general medical knowledge. The scheme does not provide for relief for the crowded curriculums of the first three years. It ignores the demands for more thorough instruction in the central sciences of anatomy, chemistry, physiology, bacteriology and pathology. In none of these branches, except perhaps anatomy, are instructors satisfied that students now secure a genuine grasp of the subject. Courses in pathology, especially those limited to the second year, cannot hope to cover adequately the fields of pathologic anatomy, histopathology and pathogenesis. Pathologic anatomy is nearly a lost art, and although it forms the foundation stone of internal medicine, few internists and fewer surgeons are reasonably familiar with what disease does in the body. The student's glimpse of the immense and significant field of histopathology shortly fades and leaves a void which befogs the practitioner throughout his entire career. Even in the laboratories it is becoming more and more difficult to obtain expert

interpretation of histologic changes. The discussion of the pathogenesis of diseases often leads directly into speculation, but the competent medical speculation of today leads to the substantiated body of medical knowledge of tomorrow, and without it medical progress comes to a standstill. Not many medical students become sufficiently acquainted with medical literature to engage successfully in speculation.

The fifth clinical year makes no provision for substantial courses in chemical pathology, immunology, hygiene, preventive medicine, forensic medicine or other specialties, although all these departments have long been waiting patiently for recognition. In some institutions, it is true, courses are given in these subjects, but so far as I can learn, it is at the expense of more important departments.

In other words, the fifth clinical year is planned to develop practical training at the expense of medical knowledge. The issue is clearly before us. Shall the medical school undertake to train practitioners thoroughly or to educate physicians? There could be no clearer demonstration of the necessity of correct principles in the control of educational movements. If the central principle of the medical school is to train practitioners, then the fifth clinical year should be adopted. It will certainly tend to produce that result, and with a modicum of medical knowledge the student will be so familiar with the exigencies of the sick room that he will be able to meet the ordinary demands of practice from the moment of graduation. That he will be able to meet all the demands made of the educated physician is, however, quite unlikely. It is impossible to train physicians in any such sense. They must gain experience from lifelong labor, and grow from their own resources.

It is the function of the medical school to turn out broadly educated physicians who are thoroughly grounded in the knowledge of disease and who will find in this knowledge resources enabling them to profit by their experience as practitioners.

It has been stated that we do not want to train scientists. There is little danger of doing so. We urge the adequate teaching of physiology and pathology because such knowledge makes better practitioners, not because it may make scientists.

It may be highly important to know what the best practitioners are now doing in hospitals, but it is far more important to have some experience in solving a medical problem by one's own resources. The best practice may not always be the present vogue, and improvements in practice do not come from the imitator but from the investigator. I have been assured by many that a fifth year spent in clinical or laboratory research would be of far greater value to the student than a year of routine hospital service. A thorough acquaintance with the literature of one disease or of one aspect of a disease would establish a critical standpoint by which the student could judge the work of his colleagues and the current contributions of the day. A year spent in such work would save the young practitioner from becoming a ready prey to every new medical conceit, and add to his qualifications a competent critical judgment. It is for this reason and not for the object of training scientists that a broad knowledge of the medical sciences is an essential part of the training of practitioners.

Will practitioners as a class, however, consent to be thus summarily excluded from the realm of scientific pursuits? Will they be content meekly to receive orders what to do and report results? Unfortunately this is just the condition in which most practitioners find themselves—resourceless in the face of clinical problems. The pursuit of clinical problems is falling more and more into the hands of laboratory men, and this tendency will be accelerated by any further undue extension of clinical training. If clinicians are not to be scientists, then the progress of medicine must depend on the laboratories while the practitioners treat the sick in the time-honored fashion.

On the contrary, the powerful movement for clinical research in this country indicates that the young practitioners will not consent to be excluded from the science of medicine. They will not agree that the object of medical education is to train practitioners and not scientists. As long ago as 1846, Philip von Walter wrote, "Woe to that hospital where unscientific men work." The fifth clinical year in the service of a hospital is hardly adapted to the scientific training of clinicians. A fifth year spent on clinical problems with expert assistance would accomplish much more in this direction.

Much depends on one's conception of the function of the medical profession in the community. Those who would limit the activities of the physician to the care of the sick would reduce medicine to a system of therapeutics and even of applied therapeutics. The fifth clinical year commits us to that view, and just here lies its chief danger. As a system of applied therapeutics, medicine comes into competition with the medical cults, with results not always favorable to medicine.

It is a matter of record that when any irregular therapeutic system persistently demands the legal right to practice, it eventually receives its license. Legislatures composed of intelligent laymen are finding it difficult to detect great distinctions between regular and irregular systems of therapeutics and some legislatures have been unable to find any distinction whatever. Hence optometrists and osteopaths are practicing medicine and other cults may soon be doing so. If medicine is to keep out of company with the cults, it must not rest its claims solely on the treatment of the sick, but must meet its increasing responsibilities to medical science. It must turn out educated physicians. It must support the medical sciences by emphasizing their importance to the student choosing a career.

Medical curriculums must give a reasonable place to every department of medical knowledge, and be prepared to receive every new branch of medical activity that presents itself. The plan of introducing a fifth purely clinical year has failed to consider these paramount obligations of medicine, and therefore in its present form it does not accord with the best interests of medicine.

It should be remembered that the fifth year is the last year that can reasonably be added to the medical course. When it is added, the plan should embrace a readjustment of the entire schedule and a recognition of the demands of many branches of medical knowledge which are now presented inadequately or not at all. The dominant principle in constructing the plan should be the broadest possible education of physicians who may be able to serve the community in any medical capacity, and not alone the training of practitioners to treat the sick.

INTESTINAL OBSTRUCTION *

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Although aseptic surgery has revolutionized the mortality statistics of acute intra-abdominal diseases in general, the death rate of intestinal obstruction remains almost as high as it was thirty years ago. In the series of 276 cases studied for this report, the mortality was 45.7 per cent. In 161 cases the obstruction occurred in the small intestine, 75 of these patients dying (46.6 per cent.). Seventy-five were cases of large intestine obstructions and have a mortality rate of 44 per cent. In 40 cases the exact position of the obstruction was not given, although it is probable that it was in the small intestine. In the jejunum the obstruction proved fatal in 52 per cent. of the cases.

Much experimental work has been done in the effort to determine the cause of death in intestinal obstruction. This experimental work indicates that the secretion of the duodenal mucous membrane is involved in the production of the essential fatal factor. Hartwell and Hoguet[1] in their experiments show that dehydration is an important element in the fatal outcome of intestinal obstruction, and that in the absence of damage to the mucous membrane of the bowel, this dehydration becomes the most important factor. In pathologic obstruction of the human intestine, met in clinical work, a thoroughly intact mucous membrane is never seen. Early effects of an acute obstruction are manifested in the altered nutrition of the bowel. This is brought about by the interference with the circulation in the wall of the distended coil of intestine proximal to the point of obstruction. The slow onset of toxemia and its slight degree in a chronic obstruction, may be due to the development of a resistant epithelium with the compensatory hypertrophy occurring in the loop of bowel above the obstruction; or it may be the result of the gradual development of a vicarious function of resistance by another organ.

The original experiments of Draper[2] pointed out in a conclusive manner the existence of a toxic material in the duodenal contents. His later work has confirmed this. Furthermore, the experiments in which obstructed animals were fed minced ileum, indicate the existence of a normal detoxicating function on the part of the epithelium of the lower ileum.

Whipple, Stone and Bernheim[3] have experimented with duodenal obstructions and have proved that if the epithelium be destroyed before the duodenum is obstructed the fatal outcome is avoided.

If the contents of the obstructed duodenum of a susceptible animal be injected into the circulation of an animal of the same species[4] symptoms analogous to those of obstruction occur — vomiting, great prostration with lowered blood pressure, congestion of the kidneys, etc. If the dose of toxin is not overwhelming, the symptoms may be combated by maintaining a supply of fluid by means of hypodermic infusion, and stimulating the failing heart. Epinephrin has been found most valuable for this latter purpose.

The antagonism between epinephrin and the depressing action of the toxin is of interest, because it has been shown that acetylcholin acts as a physiologic antagonist to the suprarenal secretion. Cholin derivatives are prominent in all parts of the body and are easily decomposed, freeing the cholin portion of their molecule. This substance, when hydrolized, yields in turn neurin and muscarin, both depressing poisons, causing vomiting, lowered blood pressure, kidney irritation, etc. Cholin itself belongs to the vagotonic group of drugs, and taken into the body it causes an increased secretion of intestinal juices. One of the striking symptoms of intestinal obstruction is the immense amount of material secreted in the obstructed loops.

All of these facts point to the absorption of a chemical compound of the cholin group of substances, as the underlying essential cause of death in intestinal obstruction.

Toxemia is the real cause of the high mortality of intestinal obstruction as compared with other abdominal diseases. In the present series the causes of death in the fatal cases were the following: toxemia, 75 per cent.; peritonitis, 12 per cent.; postoperative shock, 5 per cent.; miscellaneous, 8 per cent.

Among these 127 cases there were 20 in which the bowel was gangrenous; 14 of these patients died of toxemia, 3 of peritonitis, and 3 others, fifteen, twenty and twenty-six days, respectively, after operation, from pneumonia, tuberculosis and embolism.

The toxemia is combated with great difficulty. Not only are its immediate effects on the heart and vasomotor system dangerous, but secondary effects on the kidneys, liver and other important organs add to the possibilities for disaster. Early recognition and prompt treatment of intestinal obstruction, before the toxemia has developed, offer the only hope we have at present for reducing the high mortality rate. In the present series of cases the average duration of symptoms before operation, in the cured jejunal obstructions, was one and two-thirds days; in the fatal jejunal cases, two and five-sixths days; in the ileum cases the average duration of the cured was three and one-third days, of the fatal, six days. Both sets of cases include some in which the obstruction was probably incomplete. This is especially true of the jejunal series, in one of which death from toxemia occurred although the complete obstruction was relieved in less than four hours after the onset of symptoms, while in another the patient survived, although the operation was performed on the third day. The statistics, however, agree with the acknowledged rule that the higher the obstruction the more rapidly fatal the outcome.

In a previous communication[5] I have discussed the clinical course and symptoms of intestinal obstruction, as occurring in three stages — the stage of onset, of compensation and of toxemia. These stages do not represent any definite period of time, a patient may pass within twenty-four hours through all three and die of toxemia. Gangrene may complicate either the compensatory effort or be present with the toxemia.

In the stage of onset the symptoms are pain, which is usually intermittent and crampy, but may be continuous, nausea and vomiting, with or without constipation or diarrhea. These symptoms come on suddenly and without regard to the ingestion of food.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Hartwell and Hoguet: Am. Jour. Med. Sc., March, 1912, p. 357.
2. Draper, J. W.: Experimental Intestinal Obstruction, THE JOURNAL A. M. A., Oct. 21, 1911, p. 1338.
3. Whipple, Stone and Bernheim, Jour. Exper. Med., 1913, xvii, 307.
4. Animals of different species react in divergent ways to the toxin of obstructed intestine. Cats are quite resistant, while dogs, like human beings are extremely susceptible.
5. McGlannan, Alexius: Intestinal Obstruction, THE JOURNAL A. M. A., March 8, 1913, p. 733.

When the bowels move, either spontaneously or as the result of an enema, the pain is not relieved by this action.

Lavage of the stomach may empty that organ of food, gastric secretion or duodenal contents, but without permanently relieving the pain. If, therefore, a patient is suddenly seized with abdominal pain, and an effectual enema combined with gastric lavage does not bring relief from the pain, a diagnosis of acute intestinal obstruction should be made and operation promptly performed.

If there is any hesitation about operating on such slight symptoms, a second lavage should be done after an hour. The presence of duodenal material in the washings at this time, makes the diagnosis certain and operation imperative. In eighteen cases operation was performed during the stage of onset, the diagnosis being made on these symptoms. In every case a mechanical obstruction was found and relieved and all these patients recovered.

In the second stage we have persistent pain, distention, a visible and palpable spastic coil of intestine, visible peristalsis with ladder pattern, local tenderness, etc. In this stage we frequently have gangrene of the bowel and a localized peritonitis at the seat of obstruction. In the third stage the toxemia overshadows the other complications which may be present and becomes the most urgent indication for treatment.

I shall not attempt a discussion of the general pathology and etiology of acute intestinal obstruction as a whole, but shall limit this portion of the paper to a consideration of the postoperative varieties. Of the 276 cases studied, there were 63 in which a previous operation was the etiologic factor. Forty-three patients recovered and 20 died. Of the successful cases 16 followed operation for appendicitis (14 drainage and 2 uncomplicated appendectomies). Twelve were sequelae of various gynecologic operations, and 15 of miscellaneous intra-abdominal operations. Among the fatal cases, there were 9 after appendectomy, all drainage operations, 4 gynecologic and 7 miscellaneous operations. The average duration at the time of operation of the cases resulting in recovery was two and one-eighth days, of the fatal ones, three and one-third days. In sixteen of the fatal cases the patients were operated on in the stage of toxemia.

Nearly 40 per cent. of the postoperative obstructions and 10 per cent. of all cases in this series, follow drainage operations for appendicitis. This is a potent argument in favor of early operation for appendicitis at a time when no drainage is required. Had these patients been operated on thus early, all would have been spared a second operation as a result of which 9 died. About one third of the gynecologic patients had been operated on for inflammatory lesions. In the remaining cases the obstruction was due to involvement of an intestinal coil in the adhesions of some surface left uncovered by peritoneum at the original operation.

Prompt operation in appendicitis and careful covering of surfaces in all abdominal operations, therefore, will afford efficient prophylaxis against postoperative obstruction.

Operative methods will vary with the stage of the disease at which the operation is performed. In the first stage, when there are no complications, the surgeon need only relieve the obstruction. This may be limited to the simple division of the band, or may require a resection and anastomosis for removal of a tumor. Covering in of raw surfaces, or fixation of a particular loop of intestine may become necessary in certain forms of obstruction. In the second stage gangrene of the intestine may complicate the problem. Here the operation performed varies widely with the extent of the gangrene and especially with the general condition of the patient. Practically always these patients are beginning to show signs of toxemia, some have peritonitis, while others have general disease of the vascular system. Almost always they are poor subjects for prolonged operation. Resection and anastomosis is the ideal operation, but often some expedient must be utilized. In the 29 gangrenous cases resection and anastomosis was performed 8 times with 6 recoveries. In 2 of the cases with recovery and one of the fatal cases an enterostomy was made above the anastomosis. Excision of the gangrenous area, leaving the ends of both segments open outside the wound, was done in 12 cases, 10 of which were fatal. A similar procedure with the addition of an anastomosis preliminary to the excision was carried out 4 times, all fatal. The gangrenous loop was extruded in 5 cases. In 4 of these an enterostomy was made above the gangrenous area, one patient recovering.

In the third stage enterostomy may be the only operation that the condition of the patient will justify. At present it appears that enterostomy should be added to any operation done in this stage. Enterostomy either alone or in combination with another operation was performed in 92 cases of this series; 38 of these patients recovered and 54 died. Of the toxic cases without gangrene, enterostomy was done in 77 per cent. of the cases with recovery and in but 41 per cent. of the fatal cases. It is therefore evident that emptying the obstructed loop of bowel has a decided influence on the toxemia, and that enterostomy should be done in all toxic cases, either alone or in combination with other operations, according to the general condition of the patient.

To sum up: The treatment of intestinal obstruction varies with the stage of the disease. Toxemia is the cause of death and is the important factor to be combated in the treatment. In the absence of toxemia the operative procedures are directed toward the removal of the obstructing cause and repair of any damage done the intestinal wall. When toxemia has developed, measures must be devised for combating it, regardless of what may be done in direct attack on the obstruction. These measures are: First, enterostomy for the purpose of relieving the body of material which appears to be the source of the toxemia; second, supplying a large quantity of water, best by hypodermoclysis, in order that dehydration shall not take place, and to stimulate excretion; third, injection of epinephrin intravenously or with the subcutaneous water, to counteract the effect of the toxin on the heart and the blood pressure.[6]

Toxemia is the constant fatal factor in intestinal obstruction. This explains the slight effect of aseptic surgery on the mortality statistics of the disease. At present we have no certain detoxicating or antitoxic

6. The epinephrin solution should be given as follows: After the subcutaneous water is flowing freely, the needle of a hypodermic syringe containing the epinephrin is inserted through the rubber tubing of the transfusion apparatus near the point at which this joins the transfusion needle, and the epinephrin injected into the flowing stream of water. In this way it is carried into the circulation in a fairly concentrated solution without great local reaction.

agent, and what slight improvement has been made in the results of treatment must be attributed to earlier intervention. Recognition of the disease in its early stage before the toxemia has developed and prompt operation in this early stage offer the only hope for reducing the high mortality rate of acute intestinal obstruction.

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ABSTRACT OF DISCUSSION

DR. JOHN WILLIAM DRAPER, New York: We have studied intestinal obstruction from the experimental standpoint for more than ten years and there are certain factors which have come to a focus so definitely as to warrant their presentation clinically. In the first place, I feel that we owe a great deal to Dr. McGlannan's very careful clinical study of this long series of cases. It is the only series in which this has been done, and after all, it is the clinical study combined with the experimental which ultimately will give us the information that we require to save the lives of acutely obstructed patients. First in importance is the aboral portion of the colon. It has a far-reaching bearing on therapeusis. In all of the experimental animals dying from acute intestinal obstruction, the only pathologic lesion demonstrable morphologically was an acute inflammatory condition of the terminal colon. That is almost analogous to the condition seen after the giving of a lethal dose of toxins—for instance, diphtheria—and it suggests very strongly that whatever the toxin may be, the colon plays a very important part in its elimination. This function, however, is restricted to the aboral portion of the colon, if morphologic evidence is to be depended on.

The next point is dehydration, of which the essayist has spoken. Dehydration has been brought to your attention prominently by certain investigators of obstruction who thought that if enough water were introduced into the economy, death would not ensue. There is great variation in individual resistance to toxins, and their dilution by water naturally lengthens life. In the series of experiments we made about two years ago, we showed conclusively by the use of pilocarpin and other drugs that a much greater degree of dehydration might be produced than could be found in animals dying of acute obstructions, yet those animals were perfectly comfortable and showed no clinical signs of sickness whatever. Dehydration is therefore but a small factor in obstructive death. Finally, we have completed another series of experiments, which, while not so conclusive as those previously reported, show amply, in our belief, that the source of the toxin is autogenous rather than bacterial. They coincide peculiarly with the results obtained by feeding kidney tissue after double nephrectomy. The method, briefly, is to feed homologous epithelium of jejunum and ileum to duodenally obstructed animals. While this does not prevent death, it certainly prolongs life. I wish to go on record as believing that these experiments, in conjunction with the studies of Dr. McGlannan, show that the cause of death is not a subinfection of bacterial origin, but rather a true autotoxemia, the unknown poison arising from a perversion in function of the intestinal glands.

DR. A. MCGLANNAN, Baltimore: In closing I should like to explain my use of the term dehydration in outlining the treatment. I have used it improperly, I see now. I am familiar with the experiments of Dr. Draper, in which the dehydration of animals was produced by salivation, pilocarpin, and so on, and agree with him that the cause of death in obstruction is something much more subtle, and that it is not simple dehydration. I would say, therefore, supply water to dilute toxins. The feeding of the mucous membrane from the bowel below the duodenum is of tremendous interest. My practical experience with it has been none at all. I am hoping to be able to use it in acute intestinal obstruction in the toxic stage, because it may counteract the toxemia, the most important factor to be combated.

MENTAL AND PHYSICAL SURVEY OF SUPPOSEDLY NORMAL CHILDREN *

LANGLEY PORTER, M.D.
A. HUFFAKER, M.D.
AND
A. RITTER, PH.D.
SAN FRANCISCO

The following data are presented to the section as a study of a number of presumably healthy children and while, because of their social origin, we may not be able to apply our findings to the children of the community in general, at least the presence of so much abnormality in a group supposed to be healthy suggests that routine examinations of all children might reveal many physical conditions that would be the better for treatment.

In August, 1913, a special clinic was established at Leland Stanford Junior University Department of Pediatrics for the older children under the care of the Children's Agency of the Associated Charities, who are boarded in foster homes. The children in this group are all over 2½ years of age, as the babies are cared for at the agency baby clinic by Drs. Holsclaw and Rude.

Most of these children are placed in care of the agency through the juvenile court because of the illness, intemperance, immorality or neglect of their parents. The agency places them immediately in carefully selected private homes and keeps them under close supervision. As soon as possible after a child is received it is brought to us for a complete physical and mental examination. The agency tries to have every child under its care examined at least once a year, oftener if it seems necessary.

This clinic is held every Friday afternoon and five or six children are examined each week. The agency worker brings with her a brief written report of the child's family and medical history so far as known. Each child is given a thorough physical examination, a Binet mental and a Healy psychologic test, the blood is taken for a Wassermann test and a von Pirquet reaction is done.

Since August, 1913, 195 children have been examined at this clinic. Thirty-five of these children returned to the clinic several times for treatment or further observation.

Of these children 55 per cent. were in need of dental attention; 53 per cent. had diseased or hypertrophied tonsils; one half of these have since had their tonsils removed; eight were referred to the eye clinic (glasses, keratitis, conjunctivitis); nine were referred to the skin clinic (scabies, eczema); seven were referred to the ear clinic (one mastoid opened); fifteen were found to be tuberculous and were immediately placed under treatment; twelve presented what English observers have denominated the pretuberculous state. Only four have had positive Wassermann reactions. The records of the von Pirquet tests are incomplete so are not reported here.

Psychologic examinations are in progress and have been made on 119 of these cases. The classification adopted divides the children into those whose mentality is normal, retarded, borderline, morons and

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imbeciles. Normals are those who answer to the Binet and psychologic test for their chronologic age or above, and whose responsibility and discrimination are in accord with their age. In the group of retarded children we place those which do not test up fully to age, but whose environment or health conditions may be responsible for their temporary retardation; such cases must be sharply differentiated from the feebleminded group, as no greater crime can be committed against a child and the community than carelessly and hastily to class retarded children as incurably feebleminded. In our classification, borderline cases are those which are not normal, although they may be normal intellectually, whose environment is bad, whose training often is vicious and whose mental equilibrium is limited during the developing period, especially between pubescence and adolescence; most delinquents fall into this class and many children of this group can be prevented from developing into criminals and the wayward type by early recognition of their physical and mental makeup, followed by careful supervision and guidance. Morons are such high-grade feebleminded as never at any age acquire a mental age greater than 10 years; and imbeciles are of such low grade mentality that the mental capacity never exceeds that of a normal child of 7 years. Particular stress is laid on the search for anomalies of internal secretion but none have been discovered in this series.

Following this classification we have found that the absolutely normal children comprise almost 66.5 per cent.; the retarded about 23 per cent.; the borderline cases about 7 per cent.; the morons four of the 119 cases, or 3 per cent., and one imbecile was found, making 0.8 per cent.

To our mind the important outcome of the mental survey of these children is the discovery of the retarded group, and the bringing to bear on its individuals the best moral and intellectual training obtainable applied after a study of the individual's needs and his weaknesses. We hope that after we have followed these cases for some years we may be able to report on the effective handling of such a group.

On the physical side the most interesting single fact observed was the high proportion of children who showed evidence of involvement of the tracheobronchial lymph glands, while only five cases showed the usual symptoms of involvement of the lung with tuberculosis; eighteen children gave evidence of involvement of the mediastinal gland as shown by physical examination and confirmed by roentgenograms. Opportunity was taken to study the D'Espine sign, the Korányi sign and the Ewart sign. Ewart's sign of paraspinal dulness was first described by that author in 1909, as pathognomonic changes in mediastinal contents and we found it to be of some value as an indication of large involvements of mediastinal glands. Von Korányi, in 1897, published a study of tones produced by percussion on the normal spine and the changes in the tones produced by disease. His plan was elaborate in detail but the important contributions were that normally there is a dulness to percussion over the first, second and third dorsal vertebrae, rarely over the fourth, with resonance of increasing degree to the twelfth. He pointed out that dulness on percussion over the fourth, fifth and sixth spines, especially, and those below it, indicated pathologic involvement of the mediastinal tissues, most often of the tracheobronchial glands. Von Korányi's percussion has been a routine of Stanford clinic since 1907, and we believe that it has proved of great value in aiding us to diagnose early tuberculosis of the tracheobronchial glands.

Our attention was not called to D'Espine's sign until 1912, since when we have studied it. D'Espine describes it as an echoed whisper following a spoken word heard in the stethoscope placed over the seventh cervical and first or second dorsal spine. Our experience with this sign has not led us to attach great value to it as an aid in the diagnosis of early involvement of the tracheobronchial nodes, although the phenomenon undoubtedly always is present when the enlargement is extreme and Ewart's paravertebral dulness present. During the investigation of D'Espine's sign we were led to study the whispered pectoriloquy over the spine and we have found that it runs quite parallel with the dulness found in well-developed cases of mediastinal involvement, but that it is a much earlier and more delicate sign than any other yet brought to our notice. We have found it in an area exceeding that of the dulness on many occasions and in some we have found only normal dulness with the whispered voice clearly transmitted through the fifth, sixth, seventh and even eighth dorsal vertebrae. In no case has a roentgenogram of a chest which has shown this acoustic phenomenon failed to reveal marked infiltration of the roots of the lungs and apparent enlargement of the tracheobronchial lymph glands. The study of this pectoriloquy and its relation to disease of the mediastinum has been done almost entirely by Dr. A. B. Huffaker. We are not of those who believe that every involvement of the tracheobronchial lymph nodes is essentially tuberculous; we have found the condition in whooping cough and acute respiratory disorders during the stage of infection and for some time after only to see it disappear at a later date, so we feel that while every case which shows Korányic dulness and whispered pectoriloquy below the third dorsal vertebra should be roentgenographed, we do not feel that even the visible evidence so furnished is proof that tuberculosis has caused the pathologic process, nor can we feel always that a positive skin test to tuberculin makes such a picture pathognomonic. As for the D'Espine sign as described by the originator, we feel that it is valuable only when the mediastinal involvement is extreme.

Besides evidence of tuberculosis in the chest this group supplied one tuberculous spine; two other cases of bone tuberculosis; three of cervical tuberculous adenitis and two healed tuberculosis cases.

We are surprised, especially considering the family histories of many of the children in this series, at the low proportion of positive Wassermann reactions, and also at the few children who needed to be fitted with glasses—five cases. Ear complications, considering the large number of adenoids and diseased tonsils reported, were surprisingly low. The condition of the teeth of the children was found to be extremely bad and yet in spite of this there is very little anemia and practically no digestive disturbance. An intensive study of the dental conditions and the results on the health of these children is being prepared for presentation later.

The two outstanding facts that arise from this study are first, that 33.5 per cent. of a group of children older than 2½ years showed some mental retardation,

and second, in their physical examinations, it was found that 9 per cent. showed evidence of tracheobronchial adenopathy which would be interpreted as tuberculous by many clinicians and which was probably tuberculous in a large proportion of the cases. These children have been put out of doors and given the approved hygienic treatment for tuberculosis. Although we do not feel that all of them were tuberculous we have been afraid to omit such care and oversight as was due them if they were.

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ABSTRACT OF DISCUSSION

DR. C. G. GRULEE, Chicago: The percussion of the spine for tuberculous lymph nodes is especially valuable in young babies, in which one cannot get the finer pectoriloquy. One can use percussion in babies and have it confirmed by the Roentgen ray. As to the tracheobronchial lymph nodes clearing up, this sometimes takes place much too rapidly for one to regard the condition as tuberculous. In young children in whom it seems probable that there are enlarged tracheobronchial lymph nodes, we may get no shadow from the enlarged glands; we can only see those that lie to the right, but if they lie behind and to the left we cannot see them. As to the Wassermann reaction, I am afraid we are inclined to put too much stress on it. I have seen a number of cases in which the Wassermann was negative and the child had syphilis. One such instance occurred in a baby which was brought to me with the typical florid eruption of syphilis and the mother and father both gave a negative Wassermann. I saw another case in the baby of a wet-nurse in which the Wassermann was negative in both mother and child, although the latter had a typical congenital syphilis.

DR. EMMA MERRITT, San Francisco: I have heard about the tracheobronchial glands for many years, but that what we find out about them by the radiograph is so very different from what we formerly knew I am not so certain. Bearing on this I wish to say that about thirty years ago in Paris Jules Simon in *Les Infants Malades* made the statement in reference to the tracheobronchial glands that in whooping cough there was adenopathy, an enlargement of the tracheobronchial lymph glands. It seems that these old observers, though they did not have the helps in clinical diagnosis that we have today, made some very correct observations by necropsy, by percussion and by auscultation, and from their knowledge and experience in those days they found that the tracheobronchial glands could become enlarged during whooping cough and remain large for a number of months afterward, and that such a condition was probably not tuberculous.

DR. A. HUFFAKER, of San Francisco: I wish to speak for a moment on the technic of bringing out the whispered pectoriloquy mentioned by Dr. Porter. The most favorable position for this is to have the child sit on one stool with its feet resting on a lower rung of a second stool, the body being bent forward with the elbows resting on the thighs. This relaxes the spinal muscles. For spinal percussion begin then to percuss at about the eighth dorsal vertebra, where normally there is full resonance, and continue upward until the resonance becomes less. Over the upper three or four dorsal spines the percussion note is normally less resonant than over those lower down. To examine for the whispered pectoriloquy, have the patient, maintaining the same position of the body as that above outlined, pronounce the whispered words, ninety-nine. He should be coached a little to secure the proper degree of loudness. Then listen with the stethoscope over the seventh cervical vertebra as the child whispers these words, in response to their being whispered by the auscultator. A loud tracheal sound will be audible at that point. Continue auscultating downward over each succeeding spine until this tracheal sound is lost. This will mark the point to which the whispered pectoriloquy extends. In the examination of a series of 200 or more cases, we found that it extended as low as the fifth or sixth dorsal vertebra in some seventeen or eighteen cases. We had Roentgen-ray plates made of these patients, and in each one there were found evidences of some enlargement of the mediastinal glands. We thought this result was striking enough to justify a report of these cases.

DR. H. M. MCCLANAHAN, Omaha: I would like to ask Dr. Porter if he found any relation between diseased tonsils and chorea and rheumatism and cases of retarded development. What was the subsequent history or rule after the removal of adenoids, and what did they have to do with retarded development?

DR. J. A. COLLIVER, Los Angeles: I made a similar analysis of twenty-four or twenty-five hundred Juvenile Court cases, and while I did not go into some details as far as Dr. Porter, my results correspond very closely with his. One interesting point not mentioned in his paper was that at about puberty I found a basal heart murmur in about 20 per cent. of the cases. When I examined these same patients one, two and three years afterward, I found 75 per cent. of the murmurs had disappeared. I would like to ask Dr. Porter if he has made any effort to correct the defects which he has found, and what were the results of such correction on the moral development? In December, 1909, I presented a paper before the Southern California Medical Association, and showed that the correction of physical defects helped in decreasing the amount of juvenile delinquency by lengthening the periodicity of crime. Before the Southern California Dental Association I also presented a paper on "Does the Abnormal Condition of the Teeth Coatribute to Juvenile Delinquency?" The conclusion of the paper and discussion were that they did, both directly and indirectly.

DR. L. PORTER, San Francisco: Dr. Grulee mentioned the insufficiency of whispered pectoriloquy in young children. It is more difficult to get it between infancy and the runabout age than it is in young babies. Babies can always be made to cry and the crying voice is as valuable as the whispered voice and one can learn as much from the transmission of the crying sound as from the whisper of the older children. I agree with what was said with reference to the Wassermann reaction and syphilis; a negative Wassermann does not mean the absence of syphilis. I have had a number of patients who were given salvarsan, and it was interesting to see the Wassermann reaction develop after the administration of the salvarsan. It seems that the antibody of the patient on which the Wassermann reaction depends, is unlocked by the salvarsan. Recently I have been working with Dr. Zinsser doing Wassermann tests on different parts of the genital tract of the mother after the placenta has been removed, and we have found the Wassermann reaction positive in the placenta and negative in the cord, and we have found a positive reaction in the cord when the baby showed a negative reaction. We must regard the Wassermann as an empiric reaction. All the reactions, the von Pirquet and similar tests, must be used simply as so much evidence in regard to the case under consideration in which the doctor acts as the judicial referee. We spoke of the whispered voice below the area of dulness where the sound becomes as perfectly clear as at the child's mouth; there is a swishing sound somewhat mixed up, but it is not changed and can be heard where disease is present. We only recorded the presence of basic heart conditions; the accidental murmurs were not reported as in children between the ages of 7 and 15 years of age; accidental murmurs were not considered as evidence of heart disease. We have not undertaken as yet any extensive therapeutic measures for the correction of the defects. In answer to Dr. McClanahan's question I would say that we found no rheumatism and no chorea in this series of cases. The nutrition of the child is an important matter and will be improved in a large number of cases after the removal of deep tonsils. There are patients and even physicians who cannot be persuaded to have buried tonsils removed, even when the child has enlarged glands running

down into the neck. If these buried tonsils are removed we find that an improvement in nutrition and in the general physical condition soon follows, and hence the removal of buried tonsils is an important matter. As to the question with reference to the effects of adenoids on the development or retardation of the children, we noticed the greatest retardation in the cases in which the adenoids interfered with hearing.

RUMINATION IN INFANCY

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That rumination in young children after the first year of life is not very rare, might be inferred from the collection by Wirtz of 32 cases reported in medical literature; cases in which the anomaly, though present in adults, had begun during childhood. In fact, according to the study of Johannessen, the majority of the cases of rumination begin between the ages of 10 and 20 years, or perhaps somewhat earlier, according to Wirtz, and rarely in adult life. Though mention of childhood as the time of the onset of rumination is repeatedly to be found in the literature, detailed reports of *direct* observations of rumination in children themselves, especially in the first year of life, are very infrequent. There exist merely short, cursory notes on eleven cases of ruminant infants (Wirtz); and minute reports published by Hermine Maas, Pouliot-Moricheau, Wirtz, Lust,[1] Meyerhofer, Bruening,[2] Peiser, Aschenheim[3] and Lehnardt.

In view of the scanty number of publications on this subject, and since my observation may bring the pathogenesis of rumination nearer our understanding, and also because speedy improvement was effected by a simple procedure, I wish to submit the following case history.

Libby S., Jewish, third child, born middle of September, 1914, seemed quite well for the first five weeks, till she began to vomit violently after every nursing, the breast being offered at two-hour intervals. A competent physician reduced the nursing and also gave water, but this too was persistently thrown up. No treatment influenced the vomiting, which was so persistent that no food was kept down. The baby cried much, her stools were frequent and mostly green. The body weight, which at birth was about 6½ pounds, increased for a short period and then diminished. In the family history an interesting fact was established: the first baby from the third week of life had suffered likewise from violent and persistent vomiting, later with rumination so marked that its relatives commented on it. This first baby became very emaciated and died when 11 weeks old. At the beginning of December the mother noticed that my patient (Libby) "chewed" the regurgitated milk. On December 15 the baby was admitted to the Presbyterian Hospital, where the diagnosis of pyloro-spasm and rumination was made. Her body weight was 7 pounds 1 ounce. She not only vomited soon after feeding, but also ruminated, that is, she regurgitated a part of her food, "chewed on it," swallowed it again, after which the regurgitation reappeared with chewing and swallowing in succession. The pillow was often found wet by vomitus; after feeding the epigastrium bulged and very faint peristaltic waves could sometimes be discerned across it.

1. Lust: Monatschr. f. Kinderh., 1911, No. 6.
2. Bruening: Arch. f. Kinderh., 1913, No. 60, p. 116.
3. Aschenheim: Ztschr. f. Kinderh., 1913, No. 8, p. 161.

The body weight increased in the subsequent thirty days to 8 pounds one-half ounce, then declined slowly but continuously. Two roentgenograms were taken on Dec. 16, 1914, one-half and one and one-half hours after the administration of bismuth in 2½ ounces of milk. The first picture gave evidence of only a small amount of bismuth in the small intestines (Grulee); the second picture showed still a shadow in the region of the stomach about two thirds as large as in the first picture, and a large amount of bismuth in the small intestines. In the course of the hospital treatment various methods were tried, as lavage, gavage, breast milk, albumin milk, gruels, malt soup and barley water, but conditions did not improve; the baby became atrophic. She was discharged from the Presbyterian Hospital and was immediately transferred to the Cook County Hospital, Feb. 15, 1915, at which time the following conditions were noted:

The patient is an atrophic, quiet, 5-months-old girl, with a senile, wrinkled, pale face. The body weight is 7 pounds 12 ounces. She takes food with good appetite, but soon regurgitates and ruminates. After feeding bulging of the stomach can be observed through the very thin abdominal wall; the lower half of the abdomen is sunken.

To give a detailed, comprehensive picture of the process of rumination I present the following observations:

April 12: The baby drank 5 ounces of milk-water mixture from the bottle within twelve minutes, finishing at 9:40 a. m. At 9:50 with a slight momentary contraction of the abdominal press, perhaps also of the diaphragm, but without any sign of nausea or discomfort, the baby regurgitated milk into the oral cavity and then ruminated. The ruminating movements consisted of rhythmic movements of the lower jaw downward and upward with the frequency of 70 to 75 each in the minute. During the downward movement of the mandible the tongue lay on the floor of the mouth, its anterior part extending somewhat over the lower lip, and forming by an upward curving of the edges a deep longitudinal groove which also extended over the root of the tongue, here being especially excavated. The mouth was widely opened. During the upward movement of the jaw the tongue was lifted also by active contraction against the palate, apparently in its posterior part first, and thus the groove was obliterated and the dorsum of the tongue became somewhat convex. The tip of the tongue was not withdrawn but remained between the lips, a small space remaining open between the tongue and the upper lip, which permitted the continuous observation of the very striking movements of the tongue during all these phases of the ruminatory act. There was no real chewing, since neither lips nor jaws were closed during the act. It rather was the imitation of bottle suckling. During rumination milk welled up, filling the mouth cavity partially or completely, then the next moment it more or less disappeared into the esophagus, to reappear at once in varying quantities. However, it is probable that the actual swallowing of a part or even the whole followed mostly after a number of chewing movements. At one moment the mouth and throat was empty or almost so, at the next the mouth was filled again. Sixty-eight chewing movements were counted before the baby suddenly ceased to ruminate.

After a pause of two minutes another series of similar ruminatory movements occurred, in which about one-half ounce of milk was spilled, coming also through the nose during a violent regurgitation. After 105 chewing movements rumination stopped suddenly with audible swallowing. The baby's head was held in a face-upward position to prevent an undue spilling of milk and this fact accounted for the loss of no greater quantity. The baby showed no distress; the face wore a quiet satisfied expression as though nothing unusual was occurring. The abdomen throughout the ruminating remained relaxed, with the exception of the usual initial strain of the abdominal wall. At 10:03 the baby was given (*experimenti causa*) 1 ounce of milk mixture, which was drunk in six minutes. There followed immediately afterward 15 rumination movements in which only the posterior part of the oral cavity was filled; swallowing followed

apparently only at the end of the act; there was no spilling. At 10:22 1 ounce of water was given; at 10:28 rumination of 10 or 12 movements with appearance of fine milk coagula was noted; about one-half teaspoonful spilled over. At 10:39 52 ruminations, occasionally accompanied by a gurgling sound occurred; several times the milk disappeared entirely but immediately welled up in various quantities into the mouth. Rumination ceased suddenly with a single cough impulse. At 10:45 62 movements, often accompanied with a gurgling sound were noted. The baby's face was always calm and content, respiration being free through nose. Rumination suddenly ceased with a single cough impulse.

At 10:50 25 ruminations occurred with only a small quantity of milk in the posterior part of the mouth; at 10:52 there were 29 movements; at 10:55 rumination for one minute continuously; occasional gargling and gurgling sounds; no overflowing. At 10:58 rumination for fifty-five seconds was noted. The fluid brought up was more wheylike. Often the full quantity of fluid disappeared suddenly downward and reappeared the next moment. At 11:06 there was continuous rumination for 125 seconds. At 11:10 there were 30 movements with very small quantities of whey, containing air bubbles, in the back of the oral cavity, often with a gurgling sound. At 11:12 again there was rumination, likewise at 11:14. At 11:17 rumination was continuous for two minutes. At 11:20 there was rumination for seventy seconds; at 11:23 for forty seconds; at 11:30 for 105 seconds continuously with no spilling. Afterward no more ruminating occurred.

At 2 p. m. the baby drank 5 ounces of water, finishing at 2:30. Rumination followed at 2:32, 2:37 and 2:42 p. m. About one-half ounce *in toto* was spilled. Observation was discontinued.

The next day (April 13) I began observation at 10:50 a. m., when the child drank from the bottle 5 ounces of milk-water mixture within ten minutes. Immediately afterward 6 ruminatory movements were noted; the next minute, 28, followed at once by 117; after a pause of one minute 7 movements occurred, then in quick succession 20, 42, 174 and 8 ruminatory movements. The attack of 174 movements ended with a single cough impulse. During the last rumination overspilling occurred. At 11:30 there was ruminating of wheylike fluid. Immediately afterward a series of 96 movements, at 11:35 of 58, occurred; at 11:36 and 11:40 again there was rumination.

April 15 the child was given 5 ounces of milk-water mixture with bismuth subcarbonate for roentgenoscopy; thereafter vomiting occurred only once and rumination twice with only three movements.

The vomiting, regurgitating, ruminating and overspilling occurred in the first two hours following, perhaps, every feeding, and the pillow was generally found wet; especially in the lateral position of the head the greater amounts of the stomach content were lost by overspilling.

The number of the regurgitations, that throw the milk into the mouth cavity during the rumination, the number of the ruminatory movements and the number and duration of the single attacks varied greatly. Occasionally only a few drops of milk were "chewed" in the posterior part of the oral cavity two or three times. Sometimes, especially immediately after feeding, the baby would eject milk in a gush and lose at once a great quantity, 1 ounce or more, with only two or three abortive ruminatory movements or without any. At other times no milk would be lost during even prolonged ruminating. Occasionally the baby made a few rudimentary rumination movements with empty mouth cavity. During sleep no rumination occurred.

Whenever during rumination the nostrils were compressed and nose breathing thus made impossible, the child would immediately swallow in order to get air through the mouth and would stop ruminating entirely. This observation led to the successful application of nose obstruction for therapeutic purposes. Repeated examinations of the regurgitated matter never revealed free hydrochloric acid. Lavage performed regularly during the first week after admission to the Cook County Hospital, before the feeding in four-hour intervals, brought up only clear water or perhaps a few curds or some mucus. Roentgenoscopy on three different days about the middle of April, immediately after ingestion of a barium or bismuth meal, showed immediate passage of the food into the duodenum and jejunum, with no abnormality in the size or position of the stomach. The stools were of varying character, mostly more or less dyspeptic and contained mucus until improvement took place in the second half of April.

In the course of the treatment at the Cook County Hospital, various foods were tried, as milk-barley-water mixtures in different proportions, fat-free milk in short or long intervals, without noticeable influence on the vomiting, regurgitation and rumination. In fact, they appeared rather regularly during the two hours or so following feeding, but were perhaps less frequent and less marked after gruel-feeding.

The body weight dropped gradually from the initial 7 pounds 12 ounces to 6 pounds 3 ounces on April 19. This loss is explainable by the loss of food through spilling, by the dyspepsia and by parenteral infections (grip). Under the albumin milk and hydrochloric acid the baby's weight increased afterward rapidly in spite of acute bronchitis, and reached 8 pounds 6 ounces on May 12. The stools improved, the baby looked much better, became alert and smiled. The rumination was stopped almost entirely by regularly obstructing nose breathing for two hours after every feeding; this was begun on April 26. The regurgitating then subsided gradually and ceased practically within two weeks. About the middle of May the baby contracted measles and was taken to the Hospital for Infectious Diseases, where she died May 21. No postmortem was made.

COMMENT AND THEORY OF PATHOGENESIS

The diagnosis of rumination offers no difficulty as the distinction from other allied affections is to be made at first sight, since ructus, vomiting and simple regurgitation, occurring also in my case, are very different. The characteristic of ruminating is repeated "chewing" and swallowing of the food habitually regurgitated without effort or nausea, perhaps with a sensation of satisfaction. No real "chewing" movements were to be observed in my case, but movements rather resembling bottle suckling, and this seems to me quite natural, since at this age suckling movements are found as the physiologic reflex automatism, while chewing, strictly speaking, is only acquired later when solid or half-solid food is ingested.

The great interest of this case, as similarly in the two observations of Aschenheim, lies in the fact that rumination occurred in connection with pylorospasm symptoms which may have a pathogenic importance. Clinical observations seem to support the view that pylorospasm and habitual vomiting belong to one natural group, varying mainly in the extent and severity of the nervous disturbance, the basis probably being a neuropathic state, a constitutional nervous overirritability, which is shown in disturbances of the reflex mechanism governing the stomach, and which, if of minor degree leads only to the common "spitting up" of infants.

The assumption of a development of a pathologic "Bedingungsreflex" (conditional reflex) in the sense of Czerny and Ibrahim, originating from a somewhat physiologic reflex, seems to be justified as the origin of rumination.

A complex of motor actions that at first came into existence accidentally was frequently repeated and became intensified to a pathologic degree and firmly established in its elements, namely, during the frequent vomiting accompanying the original pylorospasm, at first the reswallowing of the regurgitated milk

occurred accidentally, especially in the face upward position, and undoubtedly the milk in the mouth as a foreign body stimulated the "chewing" movements. By frequent repetition these motor processes were established as a functional reflex act of complex elements that through facilitation gradually became so well established that the mere return of one of these elements sufficed to provoke the entire complex; stimulation of the sensory gastric nerves immediately caused explosion, in numerous repetitions, of the whole chain of ganglion cells concerned in the process of regurgitating, chewing and swallowing.

Rumination being very infrequent in comparison with habitual vomiting, we must assume the presence of a predisposition for the development of such a pathologic mechanism, very probably a neuropathic state, which admittedly plays an important rôle in the acquisition of pathologic habits, the rapid and ready fixation of other acquired motor disturbances. The occurrence of rumination in two babies of the same family in the first months of life together with the presence in both cases of gastric hyperkinesis points to family predisposition, that is, to a congenital factor.

In my case the chain of automatic motor processes was clinically initiated by a momentary strain, even though slight, of the abdominal press and perhaps also of the diaphragm; that expressed the fluid into the oral cavity, then rumination followed. During the succession of chewing, swallowing and regurgitation, etc., the abdominal wall was entirely relaxed. Evidently through frequent repetitions of vomiting the baby had acquired a high degree of ease and skill. The rumination was acquired at first accidentally a few weeks after vomiting and regurgitating had started, just as occurred in the first baby of the family.

In infants, the possibility, in some cases, of the suppression of rumination by diversion or the aggravation by excitement as in the case of Maas is in favor of the assumption of rumination being a conditional reflex. Also the prompt effect in my case on the whole motor process through an interruption of the chain in its most recently acquired link likewise adds to this assumption. This speedy improvement also militates against the supposition of an organic cause.

Rumination is a motility neurosis of the stomach that occasionally accompanies functional pylorostenosis and habitual vomiting. This fact explains a few symptoms observed in some ruminant infants, such as visible peristalsis and bulging of the stomach, atrophy, obstipation, emptiness of the small intestines, the persistency of the phenomenon and the occasionally sudden improvement. However, in a few cases (Wirtz, Lust, Bruening) there was no peristalsis and obstipation observed and in the cases of Meyerhofer the fluoroscope did not reveal any anomaly of size, position or motor action of the stomach; such facts we must not overlook. It may be in these cases, that a relative, functional insufficiency of the cardia is present, which supposition seems supported by the postmortem findings of dilatation of the lower half of the esophagus in Lust's case.

The origin of rumination in our case was due to the habitual vomiting from pylorospasm (hyperkinesis). The roentgenograms taken at the Cook County Hospital excluded an organic pylorostenosis or functional pylorospasm of any noticeable degree, undoubtedly proving the subsidence of the motor disturbance revealed by the roentgenoscopy and clinical findings at the Presbyterian Hospital a few months previously. But while thus the original pylorospasm had subsided, the rumination continued for a time. Finally it may be emphasized that our patient is a girl, since, in the adult at least, rumination is far more common among males; among the few infants reported the male sex, however, does not so markedly predominate.

AGE

No case of congenital rumination is on record; always it was acquired in the course of some gastrointestinal disturbance; but a neuropathic constitution often is said to have played an important rôle at the same time. The beginning of rumination in the six infants tabulated by Bruening was between the third and seventh month of life. Peiser observed one beginning at the age of 4 weeks. In Aschenheim's case the 5-months-old baby began to vomit during ablactation dyspepsia in the sixth week of life with symptoms of pylorospasm, and two weeks later it ruminated. In the second case vomiting began at the age of 7 months in connection with a parenteral infection likewise with symptoms of pylorospasm (visible stomach peristalsis); rumination began two weeks later. The baby in Huldschinsky's case began ruminating when about six months old.

THERAPY

A great variety of therapeutic measures especially of a dietary nature have been tried, but with uncertain success. Meyerhofer and Huldschinsky saw quick results from gruel feeding; others, as Lust, saw no therapeutic result therefrom, apart from the fact that rumination may occur so early that continuous gruel feeding is rendered impossible. Pouilot claimed a cure in his case from administration of gastric juice from the hog. Maas saw improvement from breast and buttermilk feeding with strict avoidance of excitement or irritation of the baby. In other instances a spontaneous cure took place, or rumination continued. Lavage, gavage, medication with hydrochloric acid, atropin, cocain, alkalies, bromids, etc., against the hypersensitiveness of the stomach proved disappointing. The prime purpose should be the cure by diet of the disturbance underlying the pathologic process, such as the dyspepsia, gastrospasm or pylorospasm and habitual vomiting, which account also to a great extent for the frequently observed inanition and atrophy of ruminating infants.

In my case the loss of food by overspilling, the dyspepsia, enteric catarrh and atrophy gave the main indication for the therapy. Overspilling was reduced through inclined position with sand bags to the sides of the head, to prevent the child turning its head to the side; albumin milk and hydrochloric acid improved the dyspepsia; obstruction of nose breathing as mentioned before, for two hours after every feeding, by the insertion of cotton into each nostril, was regularly effected; this forced the baby to stop ruminating and in the course of about two weeks had also strikingly lessened regurgitating. The result of this procedure was so marked, that it is to be recommended in similar cases.

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OPERATION ON THE HYPOPHYSIS ACCORDING TO HIRSCH'S METHOD

PRESENTATION OF A CASE WITH BRAIN, EYE AND OTHER SYMPTOMS *

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Disturbance in the hypophysis, leading as it does to pathologic conditions in the glands governing the internal secretions, produces a symptom-complex of peculiar interest to specialists in nearly every branch of medicine.

In the diagnosis, ophthalmology enjoys a definite preeminence. Involvement of the thyroid may bring forward the laryngologist and the special interest of otologists is demanded by such instances as the case described by Schultz and Fischer in which in a youthful acromegalic there were bony changes producing nearly complete deafness.

The rhinologist claims interest in the subject, however, of paramount importance. The development of the anterior lobe and the anomalies in formation lead him to interest himself in the embryology, and the fact that the best operative results have been obtained through his domain puts him on his mettle surgically.

First, then, I wish to report this case as a simple chronicle of an operation successfully performed by the Hirsch method. Hirsch has reported twenty-six cases, and altogether five or six other cases appear in the literature, one each by Sauer, Pierce and Halsted in this country; but doubtless there have been others, especially as I understand Hirsch has a new series ready to report.

Second, besides wishing to add my mite to the operative statistics, this case has been one of much interest to me and my colleagues of Stanford University medical clinics from a diagnostic standpoint.

P. N., an Italian, aged 43, married, came to the neurologic clinic of Stanford University, and later, when referred to the ear, nose and throat clinic, was recognized by me as a patient who, a number of years previous, had been under the care of Dr. A. Barkan, whose associate I was, which has enabled me to get a fairly complete history of the trouble from its inception.

The family history is negative. Patient is a man of moderate habits, was a carpenter, then a sausage maker. He has five children in good health, married; his wife has had no miscarriages. He denies venereal trouble. He had good health till eight years ago, when he began to have headaches, very severe, and evidence of brain pressure. When first seen about this time, he showed choked disks on both sides. The vision, however, was normal and there was no alteration of the visual fields. He had at times some vertigo and noises in the head, and at times some diplopia. He was given vigorous antisyphilitic treatment of mercury and potassium iodid. His condition apparently improved and he was fairly comfortable for several months.

The eye condition did not clear up, however, and the headache later returned. He then developed slight irritation of the right facial nerve, evidenced by convulsive twitchings of the right side of face and mouth. There was no loss of consciousness, but very considerable mental disturbance. No definite diagnosis could be made, but as the treatment did not influence the choked disks, a combined exploratory and decompression operation to save his sight was urged. This was refused by the patient. In lieu of operation, he was kept on vigorous antisyphilitic treatment with occasional periods of subjective improvement, but the eye condition remained the same except that the occasional transitory attacks of blindness were furnishing a tragic prognosis. In January, 1909, the right disk showed a swelling + 3.25 D. and the left + 4.0 D., and the fields, though peripherally normal, showed some central uncertainty. Ear, nose and throat and other findings were normal.

In March, 1909, the patient went to Italy for treatment. His vision was beginning to decline very slightly, but was still almost 20/20 right and left. The fields were beginning to show a slight peripheral curtailment. He was seen again in December, 1909, about two years since the beginning of his trouble. Vision was then reduced to right, sensation of light, projection fair; left, fingers in front of face, projection fair.

He was lost to sight until 1911, when he entered the eye clinic of Cooper Medical College suffering from iritis. The records show him to have been fairly well except for the eye condition, and he was again given mercurial treatment. A Wassermann taken at this time was negative. Later the spinal fluid showed positive Wassermann, Noguchi positive. Spinal pressure greatly increased. A few months later the Wassermann was again negative and has since remained so. Some doubt may be cast on this one positive Wassermann.

The patient entered the neurologic service of Stanford University, May, 1912, complaining of blindness and buzzing in the head. Dr. Schaller makes the following observations: To summarize: There were no positive findings except the report from the eye clinic, stating that he had secondary optic atrophy and evidence of old trouble probably specific in character. So in spite of a negative Wassermann, he was given mercurial treatment. He appeared off and on at the clinic until July, 1912. His appearance then suggested possible hypophysial disease. A roentgenogram taken of the skull showed distinct enlargement of the sella turcica.

His sugar tolerance was not high. He was given the extract of the anterior lobe for several months without apparent change in condition. Frequent Wassermanns were made, which were always negative. He was watched in the clinic until October, 1914. He then came complaining of great weakness, pains in head and knees, dizziness to the point of falling—"falls but does not lose consciousness."

General appearance is more than ever suggestive of a hypopituitarism; he has grown fat, with a heavy facial expression. Stereoptic roentgenograms, made by Dr. Walter Boardman, show a very considerably enlarged sella with disappearance of the right anterior clinoid process. A roentgenogram of the hands shows no other skeletal changes. He has almost completely lost sexual power.

Eye-clinic report by Dr. H. Barkan, epitomized: Patient shows secondary atrophy of both optic nerves, divergence of left eye of 20°, external evidence of former iritis. Vision is reduced to light sensation, right, and hand movements, left. There is no hemianopsia.

Ear, nose and throat clinic report by Dr. Graham: There are no significant abnormalities except complete loss of sense of smell on both sides.

His behavior on the administration of sugar was determined by Dr. Addis, who reports that there was nothing definitely to suggest hypophysis disturbance; distinctly no high tolerance of sugar, no polyuria. His temperature is very slightly subnormal; the pulse very slightly increased in frequency.

There being a possibility that some abnormal condition of the hypophysis was responsible for his trouble, it was decided in consultation with Drs. Schaller and Wilbur to open the hypophysis and be guided by the findings. This was done according to Hirsch's method, Dr. Harvard McNaught assisting. On account of the lack of space, a preliminary amputation of the middle turbinates was done. One-quarter grain of morphin was administered before the operation. The parts were cocainized and an ordinary submucous resection

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was followed by opening the sphenoid cells widely. From there the anterior wall of the sella was removed. The dura appeared full but not bulging, and was incised to form as wide a flap as possible. The gland did not bulge into the opening. This fact led us to proceed cautiously, because the picture of a growth or cyst, distending the cavity, was lacking. Consequently, the gland was entered carefully with a knife, and then with a small curet, but as the material in the spoon appeared almost creamy in consistence with no tendency to extrude into the wound, we concluded the operation without gaining enough tissue for pathologic examination. The purpose of the operation was to determine if there was a tumor mass or cyst in the sella, and we felt unwarranted in jeopardizing the patient further. He was very slightly inconvenienced by the operation, little more than by an ordinary submucous section. He entered the hospital November 20 and left November 27.

The immediate effect of the operation was relief of the weakness and general betterment in subjective condition. This improvement has now persisted for seven months. We think that the benefit can only be psychologic, but it is a comfort to feel that his way has been made smoother.

We are then still at a loss at this writing to account for all the symptoms in this case or to make definite prognosis of the outcome. We are inclined to retreat behind the scarred defenses afforded by the diagnosis "Syphilis in one of its forms." The mere fact that he had such severe and persistent intracranial symptoms and is still alive supports that contention, especially when backed up by the inflammatory condition of the eyes, the loss of sense of smell and the one positive Wassermann reaction. Also it is possible that such a growth may have later invaded the hypophysis and led to its enlargement. But in view of the findings at operation and few supporting symptoms, we do not think that is a fact.

The assumption that the trouble was primarily hypophysial is, on the other hand, opposed by a number of facts. In view of the enlarged sella and absence of the right clinoid process, the possibility of the escape of a tumor from the sella and the production of the mentioned choked disk without producing in its course disturbance of the optic nerves or tracts and leading to visual or field disturbance was considered. Such a possibility seemed doubtful. The literature does not discuss that particular point. All are agreed that choked disk is rare in hypophysial tumors, and in basal tumors. Also it is well known that tumors make their way out of the sella and produce choked disk. But the point we wanted to know in our particular case was whether there was ever a case reported in which a tumor, originating in the hypophysis, made its exit upward and produced a choked disk, or in any way produced a choked disk, without first involving the vision or the fields. I was not able to find in the literature such a case reported conclusively.

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State Responsibility in Tuberculosis.—The universality of tuberculosis establishes this disease as a federal problem, in which the obstacle of "States' Rights" should not be allowed to enter. It is essentially a problem affecting the welfare of the whole people without demarcation of state, county or municipal lines. As long as railroads carry infectious people, food, cattle and dirty mail bags, and ports of entry admit consumptive immigrants, the federal government cannot fail to be an important factor in this matter.—William Charles White, M.D., paper read before the Seattle meeting of the National Association for the Study and Prevention of Tuberculosis.

CONGENITAL SYPHILIS IN THE LIGHT OF THE WASSERMANN REACTION

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The Wassermann reaction has now been introduced into all civilized lands. It has been employed in millions of cases, and it is the consensus of opinion today that a positive Wassermann is practically a pathognomonic symptom of syphilis. The use of this reaction in the diagnosis and treatment of syphilis has vastly increased our knowledge concerning this protean disease. Not the least startling is the light the complement fixation test has thrown on congenital syphilis. Histologic studies and the scientific application of the Wassermann reaction have proved that many of the ideas formerly held concerning this phase of the disease were erroneous, and these brilliant advances have added much to our conception of the transmitted form of syphilis. I propose to bring out how our older ideas have been modified, and to present new facts about the latency of syphilis and its transmission into the third generation

Formerly, the terms "hereditary" and "congenital" were applied synonymously. We now know that neither syphilis nor any other infectious disease is hereditary in the true sense of the word; hence, "congenital or antepartum" are the better terms to use.

In the past, three routes of infection were thought open for the congenital transmission of syphilis, namely, through the germ cells, from the father direct to the fetus, and through the placenta. It is known today that the delicate, actively motile spirochetes rapidly disseminate themselves throughout the human tissues and readily enter the body fluids. Hence, we should also expect to find them in the semen. And Finger, Neumann, Lang, Hochsinger[1] and others have been able to produce gummas in apes and rabbits by the injection of spermatic fluid. Boardman[2] rightly states that many wives are infected from their husbands through the seminal fluid. But that the spermatozoon or ovum harboring the syphilitic germs should be able to develop seems a biologic impossibility. Similarly, it is highly improbable that spirochetes from the semen should be able to wind their way to the fetal tissue without first infecting the mother. Hence, the only route left open is transmission through the placenta.

The anatomic structure of the placenta and the physiologic relationship existing between this organ and the maternal tissue at once suggest that the placenta is the highway through which the infections are transmitted in utero. Indeed, it is definitely established that measles, smallpox, scarlet fever, typhoid fever, tuberculosis and recurrent fevers are transmitted congenitally only through this organ (Wechselmann[3]). Syphilis forms no exception; for Schaudinn,[4] Trinchese,[5] Frankl,[6] Graefenberg,[7] Bab,[8]

1. Finger, Neumann, Lang, Hochsinger: Diskussion zum Vortrage Matzenauer, Wien. klin. Wchnschr., 1903, Nos. 7-13.
2. Boardman, W. P.: Syphilitic Heredity and Congenital Syphilis, Jour. Cutan. Dis., 1914, xxxii, 545.
3. Wechselmann: Deutsch. med. Wchnschr., 1909, xxxv, 665.
4. Schaudinn, cited by Heynemann, T.: Die Bedeutung der Wassermannschen Reaktion für Geburtshilfe und Gynäkologie und die Lehre von der Vererbung der Syphilis, Prakt. Ergebn. d. Geburtsh. u. Gynäk., 1911, iii, 40.
5. Trinchese: München. med. Wchnschr., 1910, No. 11, p. 570.
6. Frankl: Beitrag zur Lehre von der Vererbung der Syphilis, Monatschr. f. Geburtsh. u. Gynäk., 1910, xxxi, 173.
7. Graefenberg: Arch. f. Gynäk., 1909, lxxxvii, 190.
8. Bab: Ztschr. f. Geburtsh. u. Gynäk., 1907, lx, 161.

and numerous others have found spirochetes in the placenta. Most observers have found the organisms only in the fetal portion of the placental tissue; but Trinchese and Hübschmann[9] have also demonstrated their presence in the maternal sinuses. Furthermore, Reitschel,[10] Bauer and Engelmann,[11] Ledermann[12] and others have found the Wassermann positive in the mothers of syphilitic children in from 75 to 100 per cent. of the cases. Bab and Reitschel hold that syphilis is transmitted through the placenta only when gross syphilitic lesions are present in this organ; but Thomsen[13] and others have shown that such changes are not necessary. Only from 33 to 60 per cent. of the placentas of syphilitic infants show gross lesions.

In regard to the time when the product of conception becomes infected, syphilitic mothers may be divided into two classes: those who are suffering from syphilis at the time of conception, and those who are infected during pregnancy. It is obvious that the activity of the infection in the mother is an important factor in determining the time when the product of conception becomes syphilitic. Thus, if the mother is suffering from a syphilitic septicemia at the time of conception, the embryo or fetus does not long escape. But in moderately active syphilis, and in the latent stage of the disease when only an occasional spirochete circulates in the blood, the chances of infection increase, for purely mechanical reasons, with the growth of the placenta. Then, too, it seems logical that the increasing stress of pregnancy renders a quiescent syphilitic focus as susceptible to a flare-up as it does in other infectious diseases. Sabin[14] states that when a mother acquires syphilis during the first five months of pregnancy, the child is almost invariably syphilitic, but that infection after that time rarely occurs. This view is not in accord with our present conception of the infectivity of syphilis. And numerous cases have been reported in which syphilis has been transmitted to the fetus in the latter half of pregnancy. Thus, Frankl reports five such cases, and Mohn[15] reports a case in which the mother was infected toward the end of pregnancy, and spirochetes occurred in the placenta. So, then, the facts at hand suggest that the majority of antepartum transmissions take place in the later part of gestation.

It has been the custom to recognize two distinct effects of syphilis on the offspring: one, the injury to the germ cell by the poisons of syphilis, giving rise to so-called syphilitic dystrophies; and the other, the true syphilitic infection. Since injuries produced to the developing ovum by the disease would be true hereditary defects, they do not come within the scope of this paper except to the extent of noting that many of these, such as syphilitic osteochondritis, Hutchinson's teeth, notched scapula and bony nodes, are directly the result of the infection. On the other hand, various deformities for which syphilis was formerly blamed, such as bicornate uterus, aplasias of the genitals, polydactylism, spina bifida and hydrocephalus, have been shown by Holt[16] and Heynemann to give negative Wassermanns. More recently, however, Stevens[17] believes that Mongolian idiocy is a hereditary defect of syphilitic origin.

Let it be clear at once that many of the factors determining the pathogenicity of any infectious disease are at present wholly unknown or only partially understood. Nevertheless, all the facts which we now possess agree perfectly with the conception so tersely stated by Osler, that, with the exception of the initial sore, all the features of the acquired form occur in the congenital. When this is thoroughly understood, many phases of congenital syphilis at once become clear. For there is no reason why the infection should not pass through a period of incubation antepartum as well as afterward. According to Vaughan,[18] this period is necessary in order that the body cells may develop specific enzymes which split the foreign protein introduced by the infection in such a fashion that substances deleterious to the life of the cells are set loose, and thus give rise to symptoms. Since infection of the fetus rarely occurs in the early period of pregnancy, and since a certain time elapses before the product of conception succumbs, we should not expect syphilis to play any important rôle in the early termination of gestation. And the evidence at hand shows that it does not; for, according to Reischig,[19] only 0.78 per cent. of aborting mothers give a positive Wassermann. But as pregnancy progresses, the chances of infection increase, and enough time is given for the development of the disease; thus, Trinchese states that from 35 to 40 per cent. of miscarriages occur in mothers giving a positive Wassermann. Syphilis is therefore a most important etiologic factor of miscarriage. For Trinchese and Graefenberg found the *Spirochaeta pallida* in from 50 to 80 per cent. of macerated fetuses; and the larger percentage of mothers of stillborn babes gives a positive Wassermann.

When infection takes place at a still later period, or when a period of latency ensues, it comes about that the accident of parturition occurs when the baby is suffering from florid secondary syphilis, as is shown by rash and rhinitis, etc. In still other cases, the baby is born prior to the onset of secondary symptoms. In the majority of these, symptoms develop in the first few months of life, but in some, later. Numerous observers, Halberstaedter, Opitz, Thomsen, Boas[20] and others, found that certain of these symptomless syphilitic babies gave a negative Wassermann. This was interpreted by Römer[21] to mean that antibodies were not produced in the very young. But his conclusions are untenable, because, in the first place, babies born with a syphilitic rash almost invariably give a positive Wassermann (Bergmann,[22] Frankl, Trinchese, Bauer, Ledermann, Thomsen).

And the reaction is always changed from a negative to a positive when the children later develop symptoms (Bauer, Bergmann, Thomsen, Boas).

9. Hübschmann: Spirochaeta pallida und Organerkrankungen bei Syphilis kongenita. Berl. klin. Wchnschr., 1906, No. 24, p. 796.
10. Reitschel, H.: Ueber den Infections modus bei den kongenitalen Syphilis, Med. Klin., 1909, No. 18, p. 658.
11. Bauer and Engelmann, cited by Reitschel (Footnote 10).
12. Ledermann, R.: Lues congenita und Serodiagnostik. Deutsch. med. Wchnschr., 1914, xl, 176.
13. Thomsen, Olaf, cited by Wechselmann (Footnote 3).
14. Sabin, Berthe: Étude de la loi de Profeta par la seroreaction de Wassermann, Ann. d. mal. vén., 1913, viii, 263.
15. Mohn, cited by Frankl (Footnote 6).
16. Holt, L. E.: Wassermann Reaction in Hereditary Syphilis, in Congenital Deformities and in Various Other Conditions in Infants, New York State Jour. Med., 1913, xiii, 466.
17. Stevens, H. C.: Mongolian Idiocy and Syphilis, THE JOURNAL A. M. A., May 15, 1915, p. 1636.
18. Vaughan, V. C.: Protein Split Products in Relation to Immunity and Disease, Philadelphia, Lea & Febiger, 1913.
19. Reischig: Statische Beobachtungen über congenitale Lues, Inaug. Diss., München, 1911.
20. Halberstaedter, Opitz, Thomsen, Boas, cited by Björkenheim, E. A.: Syphilis Sero-diagnostik mit Rücksicht auf Lues congenita, Prakt. Ergebn. d. Geburtsh. u. Gynak., 1911, iii, 83.
21. Römer, cited by Ledermann (Footnote 12).
22. Bergmann, cited by Björkenheim (Footnote 20).

In the congenital as well as the acquired form of the disease, a small percentage passes through a shorter or longer period of latency. We are only beginning to appreciate the marked insidiousness of syphilis, for Wassermann[23] reports a patient who, after remaining symptomless for fifty years, showed complete inhibition of hemolysis. I know a man, from my own experience, who gave a positive Wassermann after remaining perfectly well for twenty-five years after infection.

One phase of the latency, which until very recently has been interpreted to mean immunity, has been passed down through generations of medical students as Colles' law, formulated in 1837. According to this law, mothers giving birth to syphilitic children could not be infected by their offspring; hence, such mothers were considered immune. This law has now been completely overthrown, for in the first place, from 75 to 100 per cent. of these apparently well mothers give a positive Wassermann, and Matzenauer,[24] Frankl, Opitz, Engelmann and others have reported cases in which these so-called immune mothers later develop syphilitic symptoms. Again, mothers of this type whose second husbands were not syphilitic have given birth to syphilitic children in their second wedlock. The last crushing blow dealt Colles' law was struck by Neisser[25] and others, who found no evidence of active or passive immunity in syphilis. Similarly, the children of Profeta's type are not immune but are latent syphilitics.

It has been known for a long time that syphilitic children may remain in a state of latency during their entire childhood, and that in a certain percentage of cases the disease becomes active during puberty. But it has hitherto been the general opinion that few, if any, of those suffering from antepartum infection of syphilis reached adult life. This conception has also been shown to be erroneous, for numerous cases of congenital syphilis have been reported in patients past the twentieth year; indeed, cases occur in which such persons have reached middle life. Warthin[26] has recently added additional proof to this extreme insidiousness of syphilis by the finding of spirochetes in persons who have been free from syphilitic symptoms for decades. He finds the organism in tissues showing only insignificant microscopic lesions or none at all. In the patients without lesions, the Wassermann is negative. This agrees perfectly with the notion now held that syphilis must be more or less active in order to produce substances inhibiting hemolysis. Warthin offers a very plausible explanation of the long period of latency, sometimes observed in this disease, by stating that the human tissues grow so accustomed to the infecting agent that the body cells and the spirochetes live in symbiosis with each other. Warthin's ideas are supported by Paris and Desmouliere,[27] who have shown that the percentages of positive Wassermanns steadily decrease with the lengthening of the period of latency.

This fact, that congenital syphilis may remain latent even past adult life, strongly suggests the possible transmission of syphilis into the third generation. Fournier[28] has reported over 100 cases in which, in his opinion, such transmission had taken place. Recently Block and Antonelli[29] have reported another instance of this type.

In conclusion, I wish to report two families in which transmission into the third generation has probably taken place.

The first family came under my observation in this way: A young, recently married couple brought their first-born to their family physician. The baby had a condition in the palms of his hands and the soles of his feet which the doctor diagnosed as pemphigus. This diagnosis greatly angered the parents, who both denied exposures. The infant was taken to another physician who concurred in the diagnosis and had a Wassermann made on the baby. It was positive and the baby died in spite of treatment. The greatly alarmed parents then came to me for examination of their blood. To my astonishment, the father's blood gave negative Wassermanns repeatedly but the mother's blood was positive. In order to clear herself, the vexed mother brought her older sister and her younger brother to me for examination. The blood of both of these inhibited hemolysis. The children then dragged their irate German father to my office, and he bruskly informed me that if I found syphilis in his blood he would kill me. The man's blood was negative. Shortly afterward the child's grandmother died from what was diagnosed gumma of the brain. Less than twenty minutes after death, a sample of her blood was obtained and that, too, was positive. The grandmother was an illegitimate child.

The positive members of the family were given two injections of salvarsan and kept under mercurial treatment for three months. Then I examined the blood of all of them; they were still positive. They were given another dose of salvarsan, and mercuric chlorid injections were continued for eighteen months. At the end of that time the blood was examined and all gave negative Wassermann reactions. A year and a half after this I again examined the blood of these persons and obtained a negative Wassermann in every one. In the meantime the mother has given birth to another child who is now over half a year old and shows no evidence of syphilis.

The second family I do not consider such convincing proof of the transmission into the third generation, for the reason that the moral character of the members is not above suspicion. The next oldest daughter of this family entered the Methodist Hospital on Dr. Bierring's service. She had an inflammation of the retina, nephritis, and was suffering from epileptic fits which recurred very frequently. I was asked to make a Wassermann, and it proved strongly positive on two occasions. Her husband gave a negative Wassermann. I then learned that her older sister was married and had had two stillbirths and a child who was born apparently healthy but died shortly after birth from what they termed "a cold in the nose." A Wassermann was obtained from her, and it completely inhibited hemolysis. Her young brother also gave a positive Wassermann, and her youngest sister, aged 16 years, was operated on by an aurist for a chronic mastoiditis. A rarefied inflammation of the bone was found which the physician, at that time, believed to be tuberculous. She more recently had trouble with the other ear. She, too, gives a positive Wassermann.

I am aware of the fact that these do not constitute infallible proofs for the transmission of syphilis into the third generation. Nevertheless, from what we now know of the insidiousness of syphilis, it seems to me that they are strongly suggestive.

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23. Wassermann, A. von: Handbuch der Pathogenen Mikroorganismen, Jena, 1913, vii, 951.
24. Matzenauer: Die Vererbung der Syphilis, Vienna and Leipzig, 1903.
25. Neisser, cited by Bruck, C.: Immunität bei Syphilis, Handbuch der Pathogenen Mikroorganismen, Jena, 1913, vii, 1044.
26. Warthin, A. S.: Treponema Pallidum as a Symbiose of Human Tissues, reported at meeting of Am. Assn. Path. and Bacteriol., St. Louis, 1915.
27. Paris and Desmouliere: Syphilis héréditaire tardive et réaction de Wassermann, Bull. soc. franç. de dermat. et de syph., 1913, xxiv, 576.
28. Fournier, cited by Bab (Footnote 8).
29. Block and Antonelli, cited by Boardman (Footnote 2).

A REPORT OF FOUR CASES OF MECKEL'S DIVERTICULITIS *

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The following cases are placed on record because they are interesting examples of a comparatively rare condition, and because they will add to the value of statistics concerning the pathology of Meckel's diverticulum:

CASE 1.—W. F., man, white, aged 32, was admitted early in the evening of Feb. 7, 1914, to the University Hospital on the surgical service of Dr. Edward Martin. The patient stated that he had been feeling quite well until the night before when, shortly after lifting a bed, he began to experience a dull aching pain in the right iliac region. The pain gradually became more severe and colicky in character, and moved toward the umbilicus. Following the onset of pain, he became quite nauseated, and vomited once. Bowels moved once. During the night he was unable to sleep because of the pain. No respiratory, cardiac, urinary or nervous symptoms could be elicited. Inquiry into his previous medical history showed that he had always suffered from transient attacks of headache, nausea and blurred vision, but that these attacks had become less frequent in the past few years. Appetite had always been good. He was never troubled with indigestion or constipation. At various times, however, he had had sharp pains in the right lower abdomen near to the umbilicus. He remembers particularly that, while employed as a freight brakeman, about six years ago, he would be seized with a severe colicky pain whenever he stood on the bumpers of the cars, where the jar was great. To relieve the pain so far as possible, he would assume a squatting posture, resting all his weight on his toes, and using his bended legs as shock absorbers. There was nothing else of importance in his medical history, and his social and family histories were negative.

Physical examination on admission was as follows: Patient is an adult male of medium build, looking older than his given age of 32. He appeared sick, had a worried and anxious countenance; lay on his back with legs flexed at right angles. Skin was warm and a little moist. Radial pulse was full, regular and of increased frequency. Tongue was covered with light brown fur. Abdomen was flat and somewhat scaphoid. There was marked boardlike rigidity over the entire right side, and some, but much less, on the left side. There was marked tenderness in the region of McBurney's point, but none posteriorly. Peristalsis was active. Further physical examination revealed nothing abnormal. Urine examination normal. On admission temperature, pulse and respiration were 100.4, 90 and 22, respectively, and blood count showed 13,600 leukocytes. The patient was operated on at once, a preoperative diagnosis of acute appendicitis having been made. The usual gridiron incision for appendectomy was used. When the peritoneum was opened, a yellowish, turbid, watery fluid was found which was under considerable pressure and lay for the most part in the pelvis. The appendix was found lying on the inner aspect of the cecum, sharply kinked on itself; it showed no evidence of an inflammatory process and did not seem to be the cause of the symptoms. The appendix was removed, and the abdomen explored. It was then that a Meckel's diverticulum was found by feeling along the inner side of the incision. After enlarging the incision by further splitting of the muscles, it was found that the diverticulum was attached at its distal extremity by a fibrous cord to the umbilicus, and that the distal ileum was twisted around the diverticulum so as partially to obstruct the ileum and probably the diverticulum—at least there was definite enlargement of the ileum proximal to the kink. The diverticulum was about 7 cm. long, the distal 2 cm. being a fibrous cord; it arose from the ileum about 45 cm. from the ileocecal juncture. There was very definite evidence of inflammation, and at one point rupture seemed imminent; no plastic exudate had yet been formed. The diverticulum was removed by the same technic as is usually employed for an appendectomy. The proximal extremity, after being divided between clamps and thoroughly cauterized, was inverted with a purse-string suture so as to constrict the ileum in no way. Virtually, the stump was inverted into itself and did not enter the intestinal lumen. To reach the distal extremity, the skin was pulled well over toward the midline, the anterior rectus sheath split, the rectus muscle retracted away from the midline and the posterior rectus sheath split. Through this newly formed opening the fibrous distal extremity of the diverticulum was clamped and cut and the diverticulum delivered. There was no bleeding from the umbilical stump. A split rubber tube and wick were placed in the pelvis and another one at the base of the appendix, for the purpose of drainage. Abdomen was closed in the usual fashion by continuous fascial sutures. Convalescence was uneventful; the patient made a perfectly satisfactory recovery, and left the hospital after three weeks' sojourn. A culture of the abdominal fluid showed the *Streptococcus pyogenes* (middle length chains).

The pathologic diagnosis was acute interstitial diverticulitis, with normal appendix.

The specimen consisted of a diverticulum measuring 5½ cm. in length by 1.25 cm. in diameter in each extremity and 0.625 cm. in the middle. The external surface was reddened and contained one or two points which were greenish. Cross-section showed a thickened wall. The mucosa was deeply congested and contained a quantity of inspissated blood in the lumen. The appendix measured 7.5 cm. in length, was firm in consistency and showed no gross abnormalities.

Microscopically, section of diverticulum showed marked hyperemia and cellularity of all the coats, the blood vessels being uniformly distended and some free hemorrhage occurring; the mucosa, submucosa, muscular and peritoneal walls all being the seat of round cell infiltration and occasional plasma cells. The section of appendix showed a relatively large lumen, and rather inactive mucosa and submucosa and slight fibrosis of the muscular and peritoneal coats.

Six months after discharge, the patient was enjoying excellent health and able to do his work without any inconvenience.

CASE 2.—L. E. W., woman, white, aged 27, was admitted to the gynecologic service of Dr. John G. Clark at the University Hospital, Jan. 26, 1909. She stated that she had had an acute attack of right-sided abdominal pain about three years ago. The attack lasted for only a few days, but since then she had complained of more or less general abdominal pain more marked on the right side. At times the pain is referred down the right leg. She complained a good deal of indigestion, and her bowels had always been constipated. Sleep was poor. Menses began at 13, were regular, and lasted seven or eight days. Temperature and pulse were but slightly elevated on admission. At operation a Meckel's diverticulum was found, showing evidence of a subacute inflammation. The diverticulum arose from the ileum about 30 cm. from the ileocecal junction, was about 3 cm. long and was not attached at its distal extremity. It was removed and the stump inverted. The appendix was also removed; it showed only evidence of a chronic inflammation. Incidentally the uterus, which was in acute retroflexion, was suspended after the Coffey method. This patient made a satisfactory recovery.

The pathologic diagnosis was chronic diffuse appendicitis, and diverticulitis.

The appendix was 11 cm. in length. Inner half entirely normal. In outer half the vessels appeared congested, and organ was rather white and firmer than normal. There were no constrictions or concretions. The lumen was patulous. Diverticulum was a rounded culdesac about 2 cm. in length and 2 cm. in diameter. On the tip was an epiploic appendage. At the extreme base there appeared to be a slight tendency toward a constriction. Outer surface was free of adhesions but was somewhat redder than normal. The lumen was in direct communication with the lumen of the intestine. The mucosa was slightly granular. The walls were thinner than the adjacent intestinal walls. The inner surface was somewhat suggestive of a chronic inflammation.

* Reported before the Philadelphia Pathological Society, May 13, 1915.

Sections of the appendix showed the outer two coats normal. Submucosa was fibrous. The mucosa was flattened. The glands were shallow. The glandular epithelium showed active proliferation. Many of the cells contained an excess of mucus. Surface epithelium was intact, but somewhat flattened. The stroma contained considerable free blood pigment. Some of this was found in solitary follicles. The lumen was dilated and occupied by a soft concretion. The section from the tip showed the same histologic changes without the effects of pressure.

The outer coat of the diverticulum showed no pathologic changes. The glands of mucosa were normal in number, size and shape. The glandular epithelium was comparatively normal. Here and there it contained an excess of mucus and was flattened. Some points of the stroma showed an infiltration of small round cells and free blood pigments.

CASE 3.—Mrs. A., aged 36, white, was admitted to the gynecologic service of Dr. John G. Clark, at the University Hospital, April 6, 1914. The patient presented the usual symptoms of acute appendicitis, with a history of two previous attacks. The attacks were characterized by right-sided iliac pain, nausea, vomiting and localized tenderness. Temperature on admission was 101 and pulse was 100. Leukocytes 14,000. She was operated on through a large median incision. Free semipurulent fluid was present in the abdomen. Examination of the pelvis showed the left ovary to be small and reddened but evidently not the seat of the trouble. Right tube showed adhesions, evidently a chronic condition. Uterus normal. On the superior aspect of the mesentery was attached a diverticulum which sprang from the lower ileum. It was gangrenous and on the point of rupture. The diverticulum was removed, as was the appendix, right tube and ovary. Patient made an uneventful recovery.

The pathologic diagnosis was acute diverticulitis and chronic obliterative appendicitis.

The appendix was 4.5 cm. by 5 mm. Surface markedly congested, but free from adhesions. On section the lumen appeared almost obliterated.

The diverticulum was a small, thin-walled sac measuring 2 cm. in diameter and having a much congested and somewhat rough external surface.

Histologically the appendix showed that the lumen and mucosa had disappeared and had been replaced by a mass of inflammatory tissue showing a moderate amount of round cell infiltration.

The diverticulum showed on section the general appearance of the intestine; the mucosa was in part preserved, but in places it was completely destroyed and replaced by masses of inflammatory tissue. Throughout all portions of the wall were areas of intense infiltration with polynuclear leukocytes and much destruction of tissue. In other areas again were numerous, much engorged papillary blood vessels.

CASE 4.—R., woman, aged 39, also from Dr. John G. Clark's service, had undergone an operation for removal of a fibroid uterus about two months before the present trouble began. She felt perfectly well in all respects until two days before admission, when she was suddenly seized with a continuous dull pain in the epigastrium. Associated with this were frequent, sharp, paroxysmal attacks of abdominal pain of short duration, which required morphin for relief. At the onset of the trouble she vomited, and the next day her stomach became absolutely unretentive. No increase in temperature or pulse rate accompanied the condition at this time. The night before admission, her abdominal pain became more general and was lancinating; vomiting was more continuous and was accompanied by a rise in temperature and a jump in the pulse to 130. Her bowels, which were normally regular, had to be moved by an enema during the first day and tended to be costive. The patient was sent to the hospital with a tentative diagnosis of postoperative intestinal obstruction. On admission the temperature, pulse and respiration were 99, 120 and 24, respectively. Examination revealed a very tender abdomen, especially just above the pubis in the midline and exaggerated peristalsis, with little or no abdominal distention. Some rigidity of the abdominal wall was present. Vaginal examination revealed some induration in Douglas' culdesac. Heart and lungs were negative. After admission she was given oleum ricini, half an ounce, which produced such violent abdominal pain that operation was resorted to at once.

A midline incision was made between the umbilicus and the pubis. When the peritoneum was opened, free fluid was found in the abdominal cavity. Inspection of the former operative area failed to reveal any adhesions; the stump of the uterus was well covered with peritoneum. Careful search, however, revealed trouble in Douglas' culdesac. A Meckel's diverticulum was adherent in this pouch. The diverticulum was 3.5 cm. in length and 2.5 cm. in diameter; it arose from the ileum about 45 cm. from the ileocecal junction, and its distal extremity, which was rounded, was adherent to the peritoneum of the culdesac. Surrounding the diverticulum was a loop of small intestine which was so twisted as to cause a partial obstruction. The diverticulum was acutely inflamed, but not perforated; the loop of intestine was very congested, swollen and inflamed. The diverticulum was clamped, ligated and inverted as an appendix usually is. The abdomen was closed without drainage. Convalescence was satisfactory, and the patient left the hospital in four weeks feeling quite well.

The specimen consisted of a pouchlike structure measuring about 3.5 cm. in length and 2.5 cm. in diameter. It was dark reddish, and the external surface was rather rough, and in places showed evidences of mutilation. The internal surface was smooth, somewhat velvety in appearance and suggested an inflamed mucosa. Walls were from 2 to 3 mm. thick, soft and pliable.

Cross-section through pouch showed a mucosa closely resembling intestinal mucosa, but was rather thin and atrophic in appearance; submucosa, circular and longitudinal muscular coats appeared about the same thickness as those in a normal intestine. Throughout all coats there was a moderately intense round cell infiltration, and in places the serosa was thickened and showed an especially marked inflammatory reaction.

COMMENT

In reviewing these four cases, it is interesting to note that the average age was 33 years and that three of the four patients were females. In Cases 1, 3 and 4 the illness was acute, and in all the diverticula were attached distally. In Case 2 the diverticulum was free, and here the symptoms and pathologic condition were comparatively mild. The attacks of pain in Case 1, which the patient experienced while employed as a freight brakeman, seem to be well explained by the findings at operation; the diverticulum and attached ileum were suspended by a cord from the umbilicus, so that sudden jarring would tend to produce kinks and strains in the intestine which might well cause pain. In Cases 1 and 4 it seems reasonable that partial obstruction was the predisposing cause of the inflammation. The involvement of Meckel's diverticulum was not suspected preoperatively in any of the cases, and, indeed this is characteristic of the condition. All four patients recovered.

Embalming.—Francis in *Public Health Reports* describes methods of embalming and what is essential to effective work. He says it is important for health officers to be acquainted with proper methods of embalming. It is said that the exact composition of the embalming fluid is of less importance than the method of injecting it, and that almost any of the fluids used will be effective if properly applied. At least six points should be used for the injection, viz., the femoral artery toward the toes, each brachial artery toward the fingers, one common carotid artery toward the head and the same artery toward the heart. The total amount of fluid injected should be 15 per cent. of the body weight. The solution devised at the Hygienic Laboratory has the following formula: Liquor formaldehydi (U. S. P.) 13.5 c.c.; sodium borate 5 gm.; water sufficient to make 100 c.c.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1915 BY THE COUNCIL ON MEDICAL EDUCATION

The tabulated statistics herewith presented are for the year ending June 30, 1915, and are based on reports received from the medical colleges or from other reliable sources. We take pleasure in acknowledging here the courtesy and cooperation of the officers of the colleges who have made the compilation of these complete statistics possible.

STATISTICS OF COLLEGES

Table 1 (pages 688-690) gives the colleges in session during 1914-15; the population of the city; the rating given to the college in the latest classification of the Council on Medical Education; the number of students, men and women, registered during the year; the number of 1915 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 707 are given essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, on pages 692-695, shows from what states the students come who were in attendance at each medical college during the session of 1914-15. The influence of the proximity of the medical school is seen in the fact that states having medical colleges contribute more students in proportion to the population than those which have no colleges. This is shown by the dark zone of figures running diagonally down the page. A comparison of this table with the large tables based on state board examinations,[1] which show the distribution of the alumni of each college, is interesting. The college which has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York, with 1,948. Illinois contributed 1,318 and Pennsylvania, 1,140. The next states, in the order of the number of students contributed, are: Ohio, 718; Massachusetts, 572; Missouri, 508; Texas, 495; North Carolina, 480, and Michigan, 452. Four states had less than 20 each, these being Arizona, 13; Wyoming, 8; New Mexico, 8, and Nevada, 4. There were 121 students from Hawaii, Porto Rico and the Philippine Islands, and 458 students from foreign countries.

In Table 3, on page 696, the students enrolled in each college are shown by classes. This permits one to see whether the attendance at each college is increasing or decreasing. The total attendance for the first year was 3,373 as compared with 4,684 freshmen last year. The second year attendance was 3,919 as compared with 3,981 last year. The enrolments for the third and fourth years, respectively, were 3,675 and 3,864 as compared with 3,807 and 3,955 last year.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (matriculants) in the United States for the year ending June 30, 1915, excluding premedical, special and postgraduate students, was 14,891, a decrease of 1,611 below last year, a decrease of 2,124 below 1913, a decrease of 3,521 below 1912 and a decrease of 13,251 (47.1 per cent.) below 1904, when 28,142, the highest number of students, were enrolled. (See Tables 4 and 10.) Of the total number of students, 13,914 were in attendance at the non-sectarian (regular) colleges, 736 at the homeopathic and 241 at the eclectic colleges. The attendance at the non-sectarian colleges shows a decrease of 1,524 below that of last year, a decrease of 2,005 below 1913, and a decrease of 11,016 (44.2 per cent.) below 1903, when 24,930, the largest number of non-sectarian students, were enrolled. In the homeopathic colleges there was a decrease of 58 below the attendance of last year, a decrease of 113 below 1913 and a decrease of 1,173 (61.4 per cent.) below 1900, when 1,909, the largest number of homeopathic students, were enrolled. The eclectic colleges show a decrease of 29 below the registration of last year, a decrease of 15 below 1913, and a decrease of 773 (76.2 per cent.) below 1904, when 1,014, the largest number of eclectic students, were enrolled.

TABLE 4.—MEDICAL COLLEGE ATTENDANCE

Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1880	9,776	1,220	830	...	...	11,826
1890	13,571	1,164	719	...	...	15,404
1900	22,710	1,909	522	...	...	25,171
1901	23,846	1,683	664	80	144	26,417
1902	24,878	1,617	765	91	156	27,501
1903	24,930	1,498	848	149	190	27,615
1904	23,662	1,309	1,014	123	234	28,142
1905	24,119	1,104	578	114	232	26,147
1906	23,116	1,085	644	110	249	25,204
1907	22,303	1,039	545	97	292	24,276
1908	20,926	891	479	90	206	22,602
1909	20,554	809	413	52	227	22,145
1910	20,136	867	455	49	19	21,526
1911	18,414	890	433	49	...	19,786
1912	17,277	877	308	...	...	18,462
1913	15,919	850	256	...	...	17,015
1914	15,438	794	270	...	...	16,502
1915	13,914	736	241	...	...	14,891

The unusual decrease in the number of students this year, particularly in the non-sectarian colleges, was due to the enforcement, for the first time by

(Continued on page 691)

1. THE JOURNAL A. M. A., April 24, 1915, p. 1402.

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City where College is Located, (Census of 1910) Estimate of 1915	Classification by Council on Medical Education*	No. of Students Registered 1914-15 Men	No. of Students Registered 1914-15 Women	Graduates 1915 Men	Graduates 1915 Women	Grads. with A.B., B.S. or Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars) 1st year	Total Fees (Dollars) 2d year	Total Fees (Dollars) 3d year	Total Fees (Dollars) 4th year	Executive Officer	Session of 1915-16 Begins 1915	Session of 1915-16 Ends 1916	Marginal Number
	ALABAMA			114	...	57	...	4										
1	Birmingham Medical College, Birmingham (a)	166,154	B	49	...	44	...	1	...	...	...	...	...	...	.....	.....	.....	1
2	University of Alabama, School of Medicine, Mobile	55,373	A	65	...	13	...	3	53	33	165	160	160	185	Thomas H. Frazer, M.D., Acting Dean	Sept. 30	June 7	2
	ARKANSAS																	
3	University of Arkansas, Medical Department, Little Rock	53,811	B	75	2	19	...	1	57	32	125	125	125	150	Morgan Smith, M.D., Dean	Sept. 13	May 12	3
	CALIFORNIA			483	71	77	11	30										
4	College of Medical Evangelists, Loma Linda	125	C	48	15	8	4	1	44	34	136	136	136	136	Newton Evans, M.D., President	Sept. 26	June 15	4
5	California Eclectic Medical College, Los Angeles.—E. (b)	438,914	C	12	...	2	...	...	...	...	...	...	...	...	.....	.....	.....	5
6	College of Physicians and Surgeons, Los Angeles	438,914	B	122	10	24	1	1	80	36	185	182	160	175	Charles W. Bryson, M.D., Dean	Sept. 6	June 7	6
7	Oakland College of Medicine and Surgery, Oakland	185,002	B	10	2	3	1	...	40	38	185	180	150	150	Edward N. Ewer, M.D., Registrar	Aug. 16	June 1	7
8	College of Physicians and Surgeons of San Francisco	448,507	C	58	4	6	2	1	30	36	165	160	160	185	C. O. Southard, M.D., Secretary	Sept. 13	June 8	8
9	Hahnemann Medical College of the Pacific, San Francisco. H. (c)	448,507	B	41	1	6	1	...	...	...	...	...	...	...	.....	.....	.....	9
10	Leland Stanford Junior University, School of Med., San Francisco	448,507	A	87	13	15	1	16	96	36	160	155	150	150	Ray Lyman Wilbur, M.D., Dean	Sept. 1	May 22	10
11	University of California Medical School, San Francisco	448,507	A	167	26	13	1	11	95	36	190	190	167	167	H. C. Moffitt, M.D., Dean	Aug. 15	May 17	11
	COLORADO			55	4	7	1	4										
12	University of Colorado, School of Medicine, Denver	245,632	A	55	4	7	1	4	85	35	75	75	75	75	Wm. P. Harlow, M.D., Dean, Boulder	Sept. 13	June 7	12
	CONNECTICUT			69	...	7	...	7										
13	Yale University, School of Medicine, New Haven	144,596	A	69	...	7	...	7	74	35	223	170	153	163	George Blumer, M.D., Dean	Sept. 30	June 21	13
	DISTRICT OF COLUMBIA			323	3	76	...	18										
14	Georgetown University, School of Medicine, Washington	353,378	A	81	...	31	...	7	91	34	165	150	150	150	George M. Kober, M.D., Dean	Sept. 24	June 13	14
15	George Washington University Medical School, Washington	353,378	A	143	2	25	...	7	86	32	165	150	153	153	W. C. Borden, M.D., Dean	Sept. 29	June 7	15
16	Howard University, School of Medicine, Washington	353,378	A	99	1	20	...	4	38	32	137	127	127	134	Edward A. Balloch, M.D., Dean	Oct. 1	June 7	16
	GEORGIA			416	...	151	...	6										
17	Atlanta Medical College, Atlanta	170,792	A	241	...	127	...	6	103	32	150	150	150	150	William S. Elkin, M.D., Dean	Sept. 27	May 31	17
18	Georgia College of Eclectic Medicine and Surgery, Atlanta.—E.	170,792	C	21	...	5	...	...	...	...	...	...	...	...	.....	.....	.....	18
19	University of Georgia, Medical Department, Augusta (d)	49,651	A	54	...	17	...	...	50	34	55	50	55	60	William H. Doughty, Jr., M.D., Dean	Sept. 15	May 31	19
	ILLINOIS			2093	120	484	21	131										
20	Bennett Medical College, Chicago	2,360,325	B	378	15	91	1	5	75	32	140	145	130	145	Maximilian Herzog, M.D., Dean	Sept. 28	May 27	20
21	Chicago College of Medicine and Surgery, Chicago	2,360,325	B	508	21	124	1	6	157	31	155	155	155	155	Fred C. Zapffe, M.D., Secretary	Oct. 4	May 27	21
22	Chicago Hospital College of Medicine, Chicago	2,360,325	C	60	...	9	...	...	85	32	130	133	145	150	.....	Oct. 4	June	22
23	Hahnemann Medical College and Hospital of Chicago.—H.	2,360,325	B	76	10	21	2	1	87	32	151	167	171	187	Joseph P. Cobb, M.D., Dean	Sept. 28	May 25	23
24	Jenner Medical College, Chicago	2,360,325	C	160	21	21	3	...	65	36	155	150	155	190	John D. Markellar, M.D., Secretary	Sept. 6	June 14	24
25	Northwestern University Medical School, Chicago	2,360,325	A	194	...	36	...	16	135	32	190	195	190	206	Arthur R. Edwards, M.D., Dean	Oct. 5	June 6	25
26	Rush Medical College (University of Chicago)	2,360,325	A	462	35	88	6	97	304	34	185	180	180	195	John Milton Dodson, M.D., Dean	Oct. 1	June 17	26
27	University of Illinois, College of Medicine, Chicago	2,360,325	A	765	74	94	8	6	194	34	155	160	150	165	D. A. K. Steele, M.D., Dean	Sept. 30	June 14	27
	INDIANA			150	2	26	2	18										
28	Indiana University, School of Medicine, Indianapolis	259,415	A	150	2	26	2	18	121	35	100	100	150	150	Charles P. Emerson, M.D., Dean	Sept. 20	June 14	28
	IOWA			152	2	26	...	9										
29	State University of Iowa, College of Medicine, Iowa City (e)	10,987	A	147	1	23	...	9	47	34	95	85	85	95	L. W. Dean, M.D., Dean	Sept. 30	June 9	29
30	State Univ. of Iowa, College of Homeo. Med., Iowa City.—H. (e)	10,987	A	10	1	3	...	...	30	34	95	85	85	95	George Royal, M.D., Dean	Sept. 30	June 9	30
	KANSAS			98	3	13	1	12										
31	University of Kansas, School of Medicine, Rosedale (e)(f)	582,142	A	98	3	13	1	12	53	35	45	45	105	105	Melvin T. Sudler, M.D., Associate Dean	Sept. 15	June 7	31
	KENTUCKY			208	...	68	...	4										
32	University of Louisville, Medical Department, Louisville	235,114	A	208	...	68	...	4	92	32	170	170	175	180	Henry Enos Tuley, M.D. Dean	Sept. 27	June 8	32
	LOUISIANA			285	1	78	...	30										
33	Tulane University of Louisiana, School of Medicine, New Orleans	361,221	A	285	1	78	...	30	111	34	195	195	195	225	Isadore Dyer, M.D., Dean	Sept. 28	June 15	33
	MAINE			70	...	22	...	7										
34	Bowdoin Medical School, Brunswick-Portland	62,161	A	70	...	22	...	7	59	33	115	115	115	140	F. N. Whittier, M.D., Deputy Dean, Brunswick	Oct. 14	June 22	34

* From the Third Classification of Medical Colleges, revised to August 1, 1915. See page 762.

	MARYLAND			**817**	**31**	**214**	**5**	**95**													
35	College of Physicians and Surgeons of Baltimore (g)	579,500	A	140	...	57	...	...	...	...	...	...	...	...	...						35
36	Johns Hopkins University, Medical Department, Baltimore	579,500	A	330	31	84	5	87	177	33	240	240	240	240	J. Whitridge Williams, M.D., Dean	Oct. 5	June 13	36
37	University of Maryland, School of Medicine, Baltimore	579,500	A	347	...	73	...	8	302	32	165	165	165	150	Arthur M. Shipley, M.D., Acting Dean	Oct. 1	May 28	37
	MASSACHUSETTS			**705**	**60**	**173**	**16**	**92**													
38	Boston University, School of Medicine, Boston.—H.	733,807	A	67	19	15	6	5	73	32	177	172	157	185	John P. Sutherland, M.D., Dean	Oct. 7	June 7	38
39	College of Physicians and Surgeons, Boston (h)	733,807	C	46	9	12	4	...	...	...	...	...	...	...		...	...	39
40	Medical School of Harvard University, Boston	733,807	A	349	...	87	...	85	216	35	235	235	235	200	Edward H. Bradford, M.D., Dean	Sept. 27	June 22	40
41	Tufts College Medical School, Boston	733,807	A	273	32	58	6	2	124	32	155	155	155	155	Frank E. Haskins, M.D., Secretary	Sept. 29	May 29	41
	MICHIGAN			**541**	**31**	**103**	**5**	**38**													
42	University of Michigan Medical School, Ann Arbor (e)	14,948	A	280	27	39	4	37	69	35	110	100	100	110	Victor C. Vaughan, M.D., Dean	Oct. 5	June 29	42
43	University of Michigan, Homeo. Medical School, Ann Arbor.—H. (e)	14,948	A	64	4	19	1	1	21	35	110	100	100	110	W. B. Hinsdale, M.D., Dean	Oct. 5	June 29	43
44	Detroit College of Medicine and Surgery, Detroit	537,650	A	197	...	45	...	...	172	33	155	130	90	130	Joseph H. Hathaway, M.D., Secretary	Sept. 22	June 1	44
	MINNESOTA			**201**	**7**	**20**	...	**17**													
45	University of Minnesota Medical School, Minneapolis	343,466	A	201	7	20	...	17	107	35	150	150	150	150	Elias Potter Lyon, M.D., Dean	Sept. 14	June 8	45
	MISSISSIPPI			**45**	...	...	...	...													
46	University of Mississippi, Department of Medicine, Oxford (i)	2,014	A	45	...	...	...	...	14	24	81	83	...	...	W. S. Leathers, M.D., Dean	Sept. 17	June 1	46
	MISSOURI			**602**	**21**	**145**	**7**	**25**													
47	University of Missouri, School of Medicine, Columbia (i)	11,371	A	62	3	...	...	...	18	36	45	45	...	...	Guy L. Noyes, M.D., Acting Dean	Sept. 15	June 9	47
48	Eclectic Medical University, Kansas City.—E. (j)	376,182	C	56	5	12	3	...	25	31	150	150	150	150		Sept. 13	May 6	48
49	Kansas City Hahnemann College, Kansas City.—H. (k)	376,182	C	25	4	3	1	...	...	...	...	...	...	...		...	...	49
50	National University of Arts and Sciences, Med. Dept., St. Louis	734,667	C	123	4	28	2	2	61	34	140	135	135	135	Edward L. Cooley, M.D., Secretary	Sept. 20	June 10	50
51	St. Louis College of Physicians and Surgeons, St. Louis (l)	734,667	C	70	4	20	1	...	...	...	...	...	...	...		...	...	51
52	St. Louis University, School of Medicine, St. Louis	734,667	A	188	...	43	...	10	178	32	140	140	140	140	Hanau W. Loeb, M.D., Dean	Oct. 1	June 1	52
53	Washington University Medical School, St. Louis	734,667	A	75	...	29	...	13	87	34	155	150	150	155	Philip A. Shaffer, Ph.D., Dean	Sept. 23	June 8	53
	NEBRASKA			**261**	**12**	**59**	**4**	**13**													
54	Lincoln Medical College, Lincoln.—E. (s)	45,643	C	24	5	4	1	...	32	33	100	100	100	100	F. L. Wilmeth, M.D., Dean	Sept. 15	May 27	54
55	John A. Creighton Medical College, Omaha	134,274	B	146	2	45	1	6	52	27	125	120	120	130	A. L. Muirhead, M.D., Dean	Sept. 1	April 29	55
56	University of Nebraska, College of Medicine, Omaha	133,274	A	91	5	10	2	7	59	34	125	130	130	130	Irving S. Cutter, M.D., Secretary	Sept. 20	June 2	56
	NEW HAMPSHIRE			**23**	...	...	...	...													
57	Dartmouth Medical School, Hanover (i)	1,340	A	23	...	...	...	...	12	36	171	180	...	...	Colin C. Stewart, Ph.D., Secretary	Sept. 23	June 21	57
	NEW YORK			**2041**	**76**	**484**	**13**	**107**													
58	Albany Medical College, Albany	102,861	A	173	...	50	...	2	109	32	160	165	145	155	Thomas Ordway, M.D., Dean	Sept. 27	June 1	58
59	University of Buffalo, Department of Medicine, Buffalo	454,112	A	177	14	51	2	2	104	33	185	180	140	140	Thomas H. McKee, M.D., Dean	Sept. 20	June 2	59
60	Columbia University, College of Phys. and Surgs., New York City	5,333,597	A	381	...	85	...	62	223	33	255	270	250	275	Samuel W. Lambert, M.D., Dean	Sept. 29	June 7	60
61	Cornell University Medical College, New York City	5,333,597	A	115	19	17	3	20	124	34	190	185	185	200	William M. Polk, M.D., Dean	Sept. 27	June 16	61
62	Fordham University, School of Medicine, New York City	5,333,597	A	209	...	36	...	4	91	33	216	216	212	210	William P. Healy, M.D., Dean	Sept. 24	June 8	62
63	Long Island College Hospital, Brooklyn	5,333,597	A	285	...	70	...	1	113	33	205	205	200	200	Otto V. Huffman, M.D., Secretary	Sept. 30	June 1	63
64	New York Homeopathic Med. Coll. and Flower Hospital.—H.	5,333,597	B	242	...	69	...	5	70	31	165	160	150	180	Royal S. Copeland, M.D., Dean	Oct. 1	May 24	64
65	New York Medical College and Hospital for Women.—H.	5,333,597	C	...	38	...	8	...	65	33	180	175	165	180	Cornelia C. Brant, M.D., Dean	Sept. 23	June 1	65
66	University and Bellevue Hospital Medical College, New York City	5,333,597	A	264	...	93	...	1	180	34	265	300	300	275	Samuel A. Brown, M.D., Vice-Dean	Sept. 22	June 7	66
67	Syracuse University, College of Medicine, Syracuse	140,359	A	95	5	13	...	10	75	35	180	181	181	181	John L. Heffron, M.D., Dean	Sept. 21	June 14	67
	NORTH CAROLINA			**168**	**1**	**10**	...	...													
68	University of North Carolina, School of Medicine, Chapel Hill (i)	1,449	A	79	1	...	...	...	26	35	120	125	...	...	I. H. Manning, M.D., Dean	Sept. 9	May 31	68
69	North Carolina Medical College, Charlotte (m)	37,951	B	52	...	10	...	...	...	...	...	...	...	...		...	...	69
70	Leonard Medical School, Raleigh (i)	19,855	B	11	...	...	...	...	8	30	50	50	...	...	George H. Stoddard, M.D., Dean	Sept. 29	May 12	70
71	Wake Forest College, School of Medicine, Wake Forest (i)	1,449	A	26	...	...	...	...	10	35	52	52	...	...	E. B. Earnshaw, Secretary	Sept. 7	May 19	71
	NORTH DAKATO			**17**	...	...	...	...													
72	Univ. of North Dakota, School of Med., University (Grand Forks) (i)	14,827	A	17	...	...	...	...	18	36	50	50	...	...	Harley E. French, M.D., Dean	Sept. 21	June 14	72
	OHIO			**623**	**17**	**140**	**5**	**51**													
73	Eclectic Medical College, Cincinnati.—E.	402,175	B	109	5	26	...	3	35	32	120	120	120	120	John K. Scudder, M.D., Secretary	Sept. 16	May 16	73
74	University of Cincinnati, College of Medicine	402,175	A	74	6	17	2	6	137	34	155	150	150	150	Christian R. Holmes, M.D., Dean	Sept. 28	June 10	74
75	Western Reserve University, School of Medicine, Cleveland	639,431	A	169	...	38	...	37	93	34	162	155	150	155	F. C. Waite, Ph.D., Secretary	Sept. 30	June 15	75
76	Ohio State University, College of Medicine, Columbus	204,567	A	227	4	43	1	5	101	36	150	150	150	150	William J. Means, M.D., Dean	Sept. 21	June 14	76
77	Ohio State University, College of Homeo. Med., Columbus.—H.	204,567	C	44	2	16	2	...	13	35	125	125	125	125	Claude A. Burrett, M.D., Dean	Sept. 21	June 6	77
	OKLAHOMA			**92**	**1**	**20**	...	**2**													
78	University of Oklahoma, School of Med., Norman-Oklahoma City	83,559	B	92	1	20	...	2	55	35	50	33	10	10	LeRoy Long, M.D., Dean, Oklahoma City	Sept. 21	June 8	78
	OREGON			**78**	**4**	**18**	...	**1**													
79	University of Oregon, Department of Medicine, Portland	260,601	A	78	4	18	...	1	63	32	155	150	150	61	K. A. J. Mackenzie, M.D., Dean	Oct. 1	May 31	79

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA—(Concluded)

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City where College is Located. (Census Bureau Estimate of 1/1/14)	Class by Medical Education*	No. of Students Registered 1914-15 Men	No. of Students Registered 1914-15 Women	Graduates 1915 Men	Graduates 1915 Women	Grads. with A.B., B.S. or Ph.B.	Number of Teachers	College Weeks in Year	Total Fees (Dollars) 1st year	Total Fees (Dollars) 2d year	Total Fees (Dollars) 3d year	Total Fees (Dollars) 4th year	Executive Officer	Session of 1915-16 Begins 1915	Session of 1915-16 Ends 1916	Marginal Number
	PENNSYLVANIA			1365	93	337	33	74										
80	Hahnemann Medical College and Hospital of Philadelphia.—H.	1,657,810	A	85	...	22	...	3	80	34	185	185	175	175	W. A. Pearson, M.D., Dean	Sept. 27	June 1	80
81	Jefferson Medical College of Philadelphia	1,657,810	A	556	...	145	...	19	157	33	200	200	200	200	Ross V. Patterson, Sub Dean	Sept. 24	June 8	81
82	Medico-Chirurgical College of Philadelphia	1,657,810	A	294	...	82	...	6	109	34	185	185	185	185	Seneca Egbert, M.D., Dean	Sept. 24	June 9	82
83	Temple University, Department of Medicine, Philadelphia	1,657,810	B	53	10	13	3	7	57	34	169	167	151	151	Frank C. Hammond, M.D., Dean	Sept. 15	June 5	83
84	University of Pennsylvania, School of Medicine, Philadelphia	1,657,810	A	276	...	57	...	39	171	36	223	219	219	216	William Pepper, M.D., Dean	Sept. 24	June 21	84
85	Woman's Medical College of Pennsylvania, Philadelphia	1,657,810	A	...	78	...	30	5	57	34	187	181	183	181	Clara Marshall, M.D., Dean	Sept. 15	May 31	85
86	University of Pittsburgh, School of Medicine, Pittsburgh	564,878	A	98	5	10	...	4	94	34	265	250	250	250	Thomas S. Arbuthnot, M.D., Dean	Sept. 27	June 15	86
	SOUTH CAROLINA			82	...	25	...	11										
87	Medical College of the State of South Carolina, Charleston	60,121	B	82	...	25	...	11	64	32	140	140	140	140	Robert Wilson, Jr., M.D., Dean	Oct. 1	June 1	87
	SOUTH DAKOTA			12	...	...	...	...										
88	University of South Dakota, College of Medicine, Vermillion (l)	2,187	A	12	...	...	...	...	10	25	60	60	...	...	C. P. Lommen, Dean	Sept. 21	June 15	88
	TENNESSEE			846	10	273	2	26										
89	Lincoln Memorial University, Medical Department, Knoxville (m)	37,924	B	63	...	12	...	1	...	...	...	...	...	...	...	...	...	89
90	University of Tennessee, College of Medicine, Memphis (n)	148,231	A	268	4	64	1	3	113	33	105	100	100	125	Herbert Thomas Brooks, M.D., Dean	Sept. 20	June 3	90
91	University of West Tennessee, College of Med. and Surg., Memphis	148,231	C	53	...	29	...	2	30	30	55	55	55	65	M. V. Lynk, M.D., Dean	Sept. 15	May 4	91
92	Meharry Medical College, Nashville	114,899	B	348	6	71	1	12	25	30	70	70	70	80	George W. Hubbard, M.D., Dean	Sept. 7	April 20	92
93	Vanderbilt University, Medical Department, Nashville	114,899	A	264	...	97	...	10	81	34	150	150	150	175	L. E. Burch, M.D., Dean	Sept. 29	June 14	93
	TEXAS			302	11	66	4	10										
94	Baylor University, College of Medicine, Dallas	111,986	B	55	1	18	1	...	43	32	120	115	115	125	E. H. Cary, M.D., Dean	Oct. 1	May 31	94
95	Southern Methodist University, Medical Department, Dallas (p)	111,986	B	23	...	6	...	...	...	...	...	...	...	...	...	...	...	95
96	Fort Worth School of Medicine, Fort Worth	84,494	B	40	...	11	...	1	25	34	114	111	708	125	Samuel A. Woodward, M.D., Dean	Sept. 20	June 9	96
97	University of Texas, Department of Medicine, Galveston	40,289	A	179	10	31	3	9	39	32	60	50	15	10	William S. Carter, M.D., Dean	Oct. 1	May 31	97
	UTAH			27	...	...	...	...										
98	University of Utah, School of Medicine, Salt Lake City (e)(l)	100,930	A	27	...	...	...	...	20	36	70	70	...	...	Perry G. Snow, M.D., Dean	Sept. 16	June 9	98
	VERMONT			102	...	41	...	2										
99	University of Vermont, College of Medicine, Burlington	21,247	A	102	...	41	...	2	41	36	145	145	145	175	H. C. Tinkham, M.D., Dean	Sept. 29	June 28	99
	VIRGINIA			447	...	114	...	...										
100	Medical College of Virginia, Richmond	134,917	A	339	...	88	...	...	133	34	134	144	144	175	Stuart McGuire, M.D., Dean	Sept. 21	June 6	100
101	University of Virginia, Department of Medicine, Charlottesville	6,765	A	108	...	26	...	10	26	28	150	140	140	140	R. H. Whitehead, M.D., Dean	Sept. 16	June 14	101
	WEST VIRGINIA			16	3	...	...	...										
102	West Virginia University, School of Medicine, Morgantown (e) (l)	12,239	B	16	3	...	...	...	10	36	32	14	...	...	John N. Simpson, M.D., Dean	Sept. 13	June 14	102
	WISCONSIN			215	6	44	...	1										
103	University of Wisconsin Medical School, Madison (e)(l)	29,403	A	91	5	...	...	...	25	36	70	70	...	...	Charles R. Bardeen, M.D., Dean	Sept. 20	June 21	103
104	Marquette University, School of Medicine, Milwaukee	417,004	A	124	1	44	...	1	104	34	170	170	170	195	Louis F. Jermain, M.D., Dean	Oct. 1	June 15	104
	CANADA			1712	41	309	9	44										
105	University of Alberta, Faculty of Medicine, Edmonton, Alta. (q)	60,000	...	40	...	...	...	...	10	30	60	85	...	...	Cecil E. Race, B.A., Registrar	Sept. 28	May 17	105
106	Dalhousie University, Faculty of Medicine, Halifax, N. S. (r)	49,619	...	65	5	11	1	1	35	32	151	124	117	117	A. W. H. Lindsay, M.D., Dean	Sept. 8	May 4	106
107	Queen's University, Faculty of Medicine, Kingston, Ont. (r)	18,874	...	208	...	63	...	...	29	30	105	105	105	135	J. C. Connell, M.D., Dean	Sept. 13	April 26	107
108	University of Toronto, Faculty of Medicine, Toronto, Ont. (r)	376,538	...	508	30	106	6	28	185	32	150	150	150	158	A. Primrose, M.D., Secretary	Sept. 28	May 27	108
109	Western University, Faculty of Medicine, London, Ont. (r)	46,300	...	75	...	12	...	1	55	32	125	120	120	150	H. A. McCallum, M.D., Dean	Oct. 1	June 1	109
110	McGill University, Faculty of Medicine, Montreal, Que. (r)	478,712	...	260	...	60	...	6	130	33	174	181	174	204	John W. Scane, M.D., Registrar	Oct. 1	June 6	110
111	Montreal School of Medicine and Surgery, Montreal, Que. (r)	478,712	...	136	...	15	...	...	70	35	110	118	126	138	L. D. Mignault, M.D., Secretary	Oct. 1	June 30	111
112	Laval University, Faculty of Medicine, Quebec, Que. (r)	78,190	...	81	1	23	...	8	78	34	90	90	90	90	Edwin Turcot, M.D., Dean	Sept. 14	June 1	112
113	University of Manitoba, Manitoba Medical College, Winnipeg (r)	200,000	...	130	6	27	2	...	69	35	155	150	150	150	H. H. Chown, M.D., Dean	Sept. 22	May 12	113

* From the Third Classification of Medical Colleges, revised to August 1, 1915. See page 703.

(a) This school has discontinued undergraduate teaching.
(b) This college has been reported closed.
(c) Reported to have been taken over by the University of California Medical School.
(d) For non-residents of Georgia the total tuition fees each year are $150.
(e) In these states the fees given are for students of the state; for non-residents, the fees range from $10 to $30 per year additional. See descriptive matter, beginning on page 707.
(f) Population given is for Rosedale and the two Kansas Cities combined.
(g) Has merged with the University of Maryland, School of Medicine.
(h) Catalogue contains the names of 130 "matriculants and applicants," including dental students. The number of medical students in attendance is approximately as given.
(i) Gives only the work of the first two years of the medical course.
(j) Student enrolment given is that for 1913-14; graduates are those for 1915.
(k) College reported closed.
(l) Reported to have merged with the Medical Department of the National University of Arts and Sciences.
(m) Merged in 1914 with the Medical College of Virginia, where, under the terms of the agreement, the students will be taught. The North Carolina Medical College will retain a nominal existence and grant the degrees. The last class will graduate in 1917.
(n) Merged in 1914 with the College of Medicine of the University of Tennessee, where, under the terms of the agreement, the students will be taught. The Lincoln Memorial University, Medical Department, will retain a nominal existence and grant the degrees. The last class will graduate in 1917.
(o) For non-residents of state the fees are $50 additional each year.
(p) This college has been closed.
(q) Gives only the work of the first three years of the Canadian five-year medical course, which corresponds to the preliminary college science year and the first two medical years in the United States.
(r) In all Canadian medical schools the first year is devoted largely to courses in physics, chemistry and biology, which in the medical schools of the United States are taught in the one or two years of premedical collegiate work. The standard of the Canadian schools is equal, therefore, to that of the forty-four colleges in the United States which require one year of collegiate work, but that standard is surpassed by thirty-nine medical colleges in the United States which require two years of collegiate work for admission.
(s) Figures given are those for session 1913-14.

(*Continued from page 687*)

thirty-nine medical colleges, of higher entrance standards — one or two years of preliminary collegiate work. (See Table 16.)

NUMBER OF MEDICAL GRADUATES

The total number of graduates for the year ending June 30, 1915, was 3,536, a decrease of only 58 below 1914, and a decrease of 445 below 1913. The total

TABLE 5.—MEDICAL COLLEGE GRADUATES

Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1880.....	2,673	380	188	..	..	3,241
1890.....	3,853	380	221	..	..	4,454
1900.....	4,715	413	86	..	..	5,214
1901.....	4,879	387	148	18	17	5,449
1902.....	4,508	336	138	16	11	5,009
1903.....	5,088	420	149	24	17	5,698
1904.....	5,190	371	146	20	20	5,747
1905.....	5,136	276	153	22	23	5,600
1906.....	4,841	286	186	22	29	5,364
1907.....	4,591	225	121	11	32	4,980
1908.....	4,370	215	116	12	28	4,741
1909.....	4,163	209	84	15	44	4,515
1910.....	4,113	183	114	16	14	4,440
1911.....	4,006	157	110	5	..	4,278
1912.....	4,206	185	92	..	..	4,483
1913.....	3,679	209	93	..	..	3,981
1914.....	3,370	154	70	..	..	3,594
1915.....	3,286	195	55	..	..	3,536

this year is 2,211 (38.8 per cent.) less than in 1904, when 5,747, the largest number were graduated.

The number of graduates from the non-sectarian colleges was 3,286, or 84 less than last year, and 393 less than in 1913. It is a decrease of 1,904 (36.6 per cent.) below 1904, when 5,190, the largest number, were graduated from non-sectarian colleges. (See Table 10.) From the homeopathic colleges there were 195 graduates, or 41 more than in 1914, and 14 less than in 1913. It is a decrease of 225 (53.6 per cent.) below 1903, when 420, the largest number of homeopathic physicians, were graduated. The eclectic colleges graduated 55, or 15 less than last year, and 38 less than in 1913. It is a decrease of 166 (75.1 per cent.) below 1890, when 221, the largest number of eclectic physicians, were graduated.

GRADUATES HOLDING DEGREES IN ARTS

Of the 3,536 medical graduates, 858, or 24.3 per cent., were reported to hold also degrees in arts or science, as compared with 22.5 per cent. last year, 18.9 per cent in 1913, 17 per cent. in 1912, and 15.3 per cent. in 1910. Of the 3,286 non-sectarian school graduates, 839, or 22.5 per cent., were reported to have baccalaureate degrees, while of the homeopathic graduates, 16, or 8.2 per cent., were so reported, and of the eclectic graduates, 3, or 5.5 per cent., were reported as holding degrees from colleges of liberal arts. As will be noted by referring to Table 14, of the 858 graduates holding baccalaureate degrees, 131 — the largest number — came from Illinois colleges, followed by 107 from New York, 95 from Maryland, 92 from Massachusetts, and 74 from Pennsylvania. It is noted that, as expected, the percentage of graduates holding collegiate degrees is gradually increasing and will continue to increase, particularly in the non-sectarian colleges, because a larger number of medical schools are requiring college work for admission.

TABLE 6.—MEDICAL GRADUATES WITH LIBERAL ARTS DEGREES

Year	Non sectarian			Homeopathic			Eclectic			Totals		
	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.
1910.....	4,113	664	16.1	183	13	7.1	114	3	2.6	4,440	680	15.3
1911.....	4,006	683	17.0	152	18	11.8	110	4	3.6	4,273	705	16.5
1912.....	4,206	744	17.7	185	15	8.1	92	4	4.3	4,483	763	17.0
1913.....	3,679	722	19.9	209	20	9.6	93	1	1.1	3,981	743	18.9
1914.....	3,370	794	23.5	154	7	4.5	70	6	8.6	3,594	807	22.5
1915.....	3,286	839	25.5	195	16	8.2	55	3	5.5	3,536	858	24.3

TABLE 7.—WOMEN IN MEDICINE

Year.	Total women students.	Percentage of all students both sexes.	Total women graduates.	Percentage of graduates, both sexes	Women's colleges.	Students.	Percentage of all women students.	Graduates.	Percentage of all women graduates.	Co-ed. schools.	Students.	Percentage of all women graduates.	Graduates.	Percentage of all women graduates.
1904	1,129	4.3	244	4.0	3	183	16.2	56	23.0	97	946	83.8	188	77.0
1905	1,073	4.1	219	4.0	3	221	20.6	54	24.5	96	852	79.4	165	75.5
1906	805	3.5	733	4.3	3	189	21.0	33	14.1	90	706	79.0	200	85.9
1907	928	3.8	211	4.2	3	210	22.6	39	18.5	86	718	77.4	172	81.5
1908	835	3.7	185	3.9	3	186	22.3	46	24.9	88	649	77.7	139	75.1
1909	921	4.2	162	3.7	3	169	18.4	33	20.3	91	752	81.6	129	79.7
1910	907	4.2	157	3.5	3	155	17.1	41	26.1	87	752	82.9	116	73.9
1911	680	3.4	159	3.7	2	134	19.7	36	22.6	74	546	80.3	123	77.4
1912	679	3.2	142	3.2	2	143	21.1	32	22.5	64	536	78.9	110	77.5
1913	640	3.8	154	3.8	2	138	21.6	33	21.4	55	502	78.6	121	78.6
1914	631	3.8	171	3.4	2	125	21.4	25	20.7	54	506	78.6	96	79.3
1915	592	4.0	130	3.7	2	116	19.6	38	29.2	53	462	80.4	92	70.8

During the past year there were 592 women studying medicine, or 39 less than last year, a decrease of 48 below 1913, and a decrease of 537 (47.6 per cent.) below 1904, when 1,129 women students, the largest number, were reported. The percentage of all medical students was 4, or slightly larger than last year. There were 130 women graduates this year, 9 more than last year, or 3.7 per cent. of all graduates. Of all the women matriculants, 116 (19.6 per cent.) were in attendance at the two medical colleges for women, while the remaining 462 (80.4 per cent.) were matriculated in the 53 coeducational colleges. From the two women's colleges there were 38, or 29.2 per cent., of all women graduates, while 92, or 70.8 per cent., secured their degrees from coeducational colleges.

NUMBER OF COLLEGES

Until two years ago no exact data were available on which absolute statements could be made regarding the number of medical schools existing in the various years prior to 1900. Through the work of the Council on Medical Education, however, sufficient reliable data regarding all medical schools were collected and the chart prepared from which the actual number of

(*Continued on page 694*)

Marginal Number	NAME OF COLLEGE	1 Alabama 293	2 Arizona 13	3 Arkansas 128	4 California 416	5 Colorado 95	6 Connecticut 184	7 Delaware 23	8 Dist of Col 96	9 Florida 36	10 Georgia 435	11 Idaho 21	12 Illinois 1,318	13 Indiana 320	14 Iowa 222	15 Kansas 236	16 Kentucky 186	17 Louisiana 180	18 Maine 171	19 Maryland 297	20 Massachusetts 572	Marginal Number
1	Birmingham Medical College, Birmingham	26								1	7											1
2	University of Alabama, School of Med., Mobile	63																				2
3	University of Arkansas, Medical Dept., Little Rock			64												1	3	3	1			3
4	College of Medical Evangelists, Loma Linda		2		14	1				1			1	1		1						4
5	California Eclectic Med. Coll., Los Angeles.—E.				12																	5
6	College of Physicians and Surgeons, Los Angeles		1		28	3	1		1				12	4	7	3	3				1	6
7	Oakland College of Med. and Surg., Oakland				11																	7
8	College of Phys. and Surgs. of San Francisco				38		1						1		2		1					8
9	Hahnemann Medical College of the Pacific.—H.*				45																	9
10	Leland Stanford Junior Univ., School of Medicine				73	2								1							1	10
11	Univ. of California Medical School, San Francisco				123									2								11
12	Univ. of Colorado, School of Med., Boulder-Denver					49							1		1						1	12
13	Yale University, School of Medicine, New Haven		1				34						2						1		1	13
14	Georgetown University, School of Medicine					1	7		74						1			1	3	15		14
15	George Washington University Medical School				2		6	1	45	1	1		6					2		1	2	15
16	Howard University, School of Med., Washington	1		2			1		10	4	3		1		1		3			6		16
17	Atlanta Medical College	37								14	214			1			1	1				17
18	Georgia College of Eclectic Med. and Surg.—E.										21											18
19	University of Georgia, Medical Dept., Augusta									1	51											19
20	Bennett Medical College, Chicago	2		1	4		2			1	7		308	12	7	3		1	2	2		20
21	Chicago College of Med. and Surg., Chicago	4	1	1			2			4	4		214	23	15	5	2	2	2		7	21
22	Chicago Hospital College of Medicine, Chicago												60									22
23	Hahnemann Med. Coll. and Hosp. of Chicago.—H.					1	1						21	11	6	6			1			23
24	Jenner Medical College, Chicago												175									24
25	Northwestern University Medical School, Chicago.—H.			1	1	4						1	70	5	12	8	2				1	25
26	Rush Medical College (University of Chicago)	2	1	1	5	6			1		2	2	188	13	27	22	5				1	26
27	University of Illinois, College of Medicine, Chicago	1				3					2	1	150	8	14	8			1		1	27
28	Indiana University, School of Med., Indianapolis	1												145			1					28
29	State Univ. of Iowa, College of Med., Iowa City					1	1			2		1	3		122	1	1	1				29
30	State Univ. of Iowa, College of Homeo. Med.—H.														9							30
31	Univ. of Kansas, School of Med., Lawrence-Rosedale															95						31
32	University of Louisville, Medical Dept., Louisville	3	2	2	2					3	3		12	37	2	2	79	1				32
33	Tulane University of Louisiana, School of Medicine	51		14						8	9					2	2	126				33
34	Bowdoin Medical School, Brunswick-Portland						3								1				57		5	34
35	College of Physicians and Surgeons of Baltimore		1				6			1	1		1							26	7	35
36	Johns Hopkins University, Med. Dept., Baltimore	10			10		7	2	6	2	17		8	5	7	2	3	1		65	13	36
37	University of Maryland, School of Medicine	2		1	2		12		1	5	4		1	1				1		57	12	37
38	Boston University, School of Medicine.—H.															2			4		50	38
39	College of Physicians and Surgeons, Boston																				52	39
40	Medical School of Harvard University, Boston				11	8	6	1	2	1	4		7	6	5	1		1	13	2	121	40
41	Tufts College Medical School, Boston						12				1		1	1	1	1			15		223	41
42	University of Michigan Medical School					2	1				6	2	9	13	6	3	3			3	3	42
43	University of Michigan, Homeo. Med. School.—H.					2							1	3	4	2	1			1		43
44	Detroit College of Medicine and Surgery, Detroit									1			2	5		1						44
45	University of Minnesota Medical School					7							2	3	1	7				1		45
46	University of Mississippi, Dept. of Med., Oxford																					46
47	University of Missouri, School of Medicine, Columbia				1												1					47
48	Eclectic Medical University, Kansas City.—E.†																					48
49	Kansas City Hahnemann Medical College.—H.												1	1		10						49
50	Nat. Univ. of Arts and Sciences, Med. Dept., St. Louis	1		1							1	1	31		1	2	1					50
51	St. Louis College of Physicians and Surgeons																					51
52	St. Louis University, School of Medicine	1		2	2	1							37	6	14	13	1					52
53	Washington University Medical School, St. Louis			3									12		1	4						53
54	Lincoln Medical College, Lincoln.—E.†																					54
55	John A. Creighton Medical College, Omaha		1										3		20	5						55
56	University of Nebraska, College of Medicine, Omaha				1	2							2		12	7	1					56
57	Dartmouth Medical School, Hanover								2										1		7	57
58	Albany Medical College, Albany						1														4	58
59	University of Buffalo, Dept. of Med., Buffalo																				1	59
60	Columbia University, Coll. of Phys. and Surgs.	1				5	12				10	1	1	2	3		1				6	60
61	Cornell Univ. Medical College, New York City				1		8		1			1			1						4	61
62	Fordham Univ., School of Medicine, New York City						14			1			1	1							4	62
63	Long Island College Hospital, Brooklyn						2														6	63
64	New York Homeo. Med. Coll. and Flower Hosp.—H.				3		4		1				2	1				1		1		64
65	New York Med. Coll. and Hosp. for Women.—H.												1									65
66	Univ. and Bellevue Hosp. Med. Coll., New York City						15								1						1	66
67	Syracuse University, College of Medicine, Syracuse												1			1						67
68	Univ. of North Carolina, School of Med., Chapel Hill																					68
69	North Carolina Medical College, Charlotte									1												69
70	Leonard Medical School, Raleigh										1		1									70
71	Wake Forest College, School of Med., Wake Forest																					71
72	University of North Dakota, School of Medicine																					72
73	Eclectic Medical College, Cincinnati.—E.				1	1							3	5		1	8					73
74	University of Cincinnati, College of Medicine					1							1	3		1	8					74
75	Western Reserve University, School of Medicine											1	2	2	2	2						75
76	Ohio State Univ., Coll. of Med., Columbus					1											1					76
77	Ohio State Univ., Coll. Homeo. Med., Columbus.—H.												1	1								77
78	Univ. of Okla., Sch. of Med., Norman-Oklahoma City	6		1									1			9						78
79	University of Oregon, Dept. of Medicine, Portland				1	1	1						3	1	1	3		1				79
80	Hahnemann Med. Coll. and Hosp. of Phila.—H.						1															80
81	Jefferson Medical College of Philadelphia	4	1	1	7		10	2		5	4	1	5	2		3	3	1	5	3	4	81
82	Medico-Chirurgical College of Philadelphia				1		3	5			1	2	2						1	2	3	82
83	Temple University, Dept. of Medicine, Philadelphia						1	1					2	1								83
84	University of Pennsylvania, School of Medicine	2			4	1	1	3			2	2	2	2	2	1	2	1		4	2	84
85	Woman's Medical College of Pennsylvania			1											1					1	2	85
86	Univ. of Pittsburgh, School of Medicine, Pittsburgh																					86
87	Medical College of the State of South Carolina									4	1											87
88	Univ. of South Dakota, Coll. of Med., Vermillion																					88
89	Lincoln Memorial Univ., Med. Dept., Knoxville										1						7					89
90	University of Tennessee, Coll. of Med., Memphis	13		20		1			1	1	1		2				2	10				90
91	Univ. of West Tenn., Coll. of Med. & Surg., Memphis	5		4						2	2						2			2		91
92	Meharry Medical College, Nashville	29		9					1	16	36		5		2	2	13	10		1	1	92
93	Vanderbilt University, Medical Dept., Nashville	35	1	4	1	3				13	13		9		1		21	9				93
94	Baylor University, College of Medicine, Dallas										1		1				2	2				94
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

H.—Homeopathic; E.—Eclectic. * Exact distribution not given. † Figures are for 1913-14.

Marginal Number	21 Michigan.....432	22 Minnesota.....289	23 Mississippi.....228	24 Missouri.....508	25 Montana.....33	26 Nebraska.....240	27 Nevada.....4	28 New Hampshire.42	29 New Jersey.....353	30 New Mexico.....8	31 New York.....1,546	32 North Carolina 460	33 North Dakota...51	34 Ohio.....718	35 Oklahoma.....115	36 Oregon.....53	37 Pennsylvania.1,140	38 Rhode Island...64	39 South Carolina 218	40 South Dakota...54	41 Tennessee.....312	42 Texas.....605	43 Utah.....80	44 Vermont.....71	45 Virginia.....363	46 Washington.....91	47 West Virginia...172	48 Wisconsin.....387	49 Wyoming.....8	50 Philippines, etc. 121	51 Foreign.....458	52 Totals.....14,801	Marginal Number
1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	2	....	....	....	....	....	2	....	....	....	....	49	1
2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	65	2
3	....	....	2	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	17	3
4	2	2	....	1	1	5	....	....	1	2	1	....	....	....	2	....	....	....	....	....	1	5	....	....	....	4	....	....	1	....	11	69	4
5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	12	5
6	6	5	....	6	....	5	....	....	2	....	7	....	....	4	....	....	4	....	....	2	1	1	1	1	....	....	4	....	....	....	19	132	6
7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	12	7
8	1	1	....	1	....	....	....	....	....	....	....	....	....	1	....	3	....	....	....	....	....	....	....	....	....	1	....	....	....	....	11	62	8
9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	45	9
10	....	2	....	....	1	....	1	....	....	....	1	....	1	1	....	1	....	....	1	....	....	....	3	1	....	3	....	....	....	....	2	95	10
11	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	2	....	....	....	1	....	....	....	1	133	11
12	....	....	....	1	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	1	59	12
13	1	....	....	1	....	....	....	1	1	1	4	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	49	13
14	1	3	....	....	....	....	....	....	4	....	....	6	....	2	....	....	8	1	....	....	....	....	....	1	1	1	....	....	....	....	2	2	81	14
15	....	....	....	....	....	....	....	....	3	....	21	2	....	2	....	1	9	1	2	....	2	....	....	13	1	1	2	....	....	....	15	145	15
16	....	....	1	2	....	....	....	....	....	....	15	1	....	1	....	....	7	....	1	....	1	....	....	7	....	2	....	....	....	....	10	100	16
17	....	....	13	....	....	....	....	....	....	....	14	....	....	....	....	....	1	1	22	....	....	7	2	....	1	2	....	....	....	....	6	341	17
18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	21	18
19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	54	19
20	15	7	2	8	4	3	3	....	1	....	8	1	....	5	3	....	9	1	2	....	4	2	1	....	2	1	10	39	....	22	13	393	20
21	22	15	2	4	2	5	....	....	2	....	36	1	3	19	2	....	17	1	....	2	2	3	2	1	1	2	15	48	....	23	28	529	21
22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	60	22
23	5	4	....	....	....	2	....	....	....	....	....	....	....	8	1	....	3	....	....	....	....	....	....	....	....	....	4	....	....	....	2	86	23
24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	175	24
25	6	12	1	3	2	4	....	....	....	1	1	6	6	2	1	....	....	....	1	8	1	2	3	....	....	5	....	18	....	....	1	104	25
26	8	19	1	9	8	17	....	....	....	....	5	1	11	24	3	1	3	....	1	6	6	10	15	1	1	7	2	44	1	1	5	487	26
27	9	20	1	5	....	5	....	....	1	....	1	....	....	4	3	....	1	....	....	6	1	1	2	....	....	3	....	20	....	5	12	580	27
28	1	1	....	....	....	....	1	....	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	152	28
29	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	2	....	143	29
30	....	1	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	11	30
31	....	....	....	....	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	101	31
32	1	1	6	4	6	....	....	....	1	....	....	3	1	2	4	1	8	....	1	1	2	9	....	....	1	1	8	2	1	1	3	208	32
33	1	....	32	6	....	....	....	....	1	....	....	2	1	....	1	....	....	....	3	....	....	22	....	....	....	....	....	1	....	8	3	286	33
34	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	70	34
35	....	....	....	....	1	2	....	....	9	....	7	4	....	3	1	....	20	4	....	....	....	....	....	....	3	1	25	....	....	13	1	140	35
36	4	2	3	8	....	2	....	1	13	....	25	12	4	25	....	5	26	1	10	1	3	4	....	....	23	4	3	5	....	2	5	361	36
37	1	....	1	....	....	....	....	4	11	....	27	39	1	2	....	....	29	4	17	....	....	....	1	....	18	2	14	....	....	4	31	347	37
38	....	....	1	....	....	....	....	2	....	....	5	1	....	2	....	....	1	....	....	....	....	1	....	1	1	....	1	....	....	....	12	88	38
39	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	55	39
40	1	3	....	9	....	....	....	5	2	1	22	7	....	9	1	....	16	20	3	1	1	3	6	3	....	1	1	4	....	2	9	319	40
41	....	....	....	....	....	....	....	10	1	....	9	....	....	2	....	....	3	16	....	....	....	....	....	1	....	....	....	....	....	....	....	9	300	41
42	154	5	....	1	....	4	....	1	1	....	19	1	....	23	1	3	13	....	1	....	1	....	....	....	....	6	1	2	....	6	1	307	42
43	29	2	....	....	....	....	....	....	....	....	6	....	....	10	1	1	3	....	....	....	....	....	....	....	....	....	1	....	....	....	1	68	43
44	157	2	....	....	....	1	....	....	....	....	....	....	....	5	1	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	20	197	44
45	....	161	....	....	....	1	....	....	....	....	....	5	....	....	....	....	....	....	....	3	....	....	....	....	....	....	9	....	7	....	1	308	45
46	....	....	42	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	45	46
47	....	....	....	58	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	65	47
48	....	....	....	65	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	65	48
49	....	....	....	14	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....	1	29	49
50	....	....	1	76	....	....	....	....	....	....	1	....	....	4	....	....	....	....	....	....	1	1	....	....	....	....	2	....	....	....	1	127	50
51	....	....	....	74	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	74	51
52	7	2	....	61	....	4	....	....	....	....	1	....	....	14	2	2	1	....	....	1	....	....	....	....	....	5	....	6	....	....	3	188	52
53	1	2	....	29	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	1	....	3	1	....	....	1	....	5	....	1	1	73	53
54	....	....	....	....	....	29	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	29	54
55	....	12	....	7	4	81	....	....	....	....	3	....	....	1	....	1	1	....	....	3	....	....	1	....	....	2	....	....	....	2	1	148	55
56	....	3	....	1	....	58	....	....	....	....	2	....	....	1	....	....	....	....	....	2	....	....	....	....	3	....	....	....	....	....	1	96	56
57	....	....	....	....	....	....	....	7	3	....	9	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	23	57
58	....	....	....	....	....	....	....	....	2	....	164	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	173	58
59	....	....	....	....	....	....	....	....	....	....	187	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	187	59
60	2	2	....	2	....	1	....	....	22	1	253	7	....	2	2	2	3	....	1	2	....	3	2	....	3	1	1	2	....	....	7	381	60
61	....	....	1	....	1	....	....	....	13	....	90	1	....	2	....	....	3	1	....	1	....	....	1	1	1	....	1	....	....	....	1	134	61
62	....	....	....	....	....	....	....	....	13	....	112	....	....	....	....	....	6	....	....	....	....	....	....	....	....	....	....	....	....	2	55	306	62
63	....	....	....	....	....	....	....	....	7	....	204	....	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	285	63
64	....	....	....	....	....	....	....	....	22	....	187	....	....	....	....	....	5	....	....	....	....	1	....	1	1	1	....	....	....	....	1	242	64
65	....	....	....	....	....	....	....	....	8	....	50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	38	65
66	....	....	....	....	....	....	....	....	23	....	240	4	....	4	1	....	1	2	....	....	....	1	....	....	....	1	1	....	....	....	8	364	66
67	....	....	....	....	....	....	....	....	1	....	80	....	....	....	....	....	5	....	....	....	....	1	....	....	....	....	....	....	....	....	....	100	67
68	....	....	....	....	....	....	....	....	....	....	....	23	....	....	....	....	....	....	3	....	....	....	....	....	1	....	....	....	....	....	1	80	68
69	....	....	....	....	....	....	....	....	....	....	....	48	....	....	....	....	....	....	2	....	....	....	....	....	1	....	....	....	....	....	....	52	69
70	....	....	1	....	....	....	....	....	....	....	1	5	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	11	70
71	....	....	....	....	....	....	....	....	....	....	....	21	....	....	....	....	....	....	2	....	....	....	....	....	2	....	....	....	....	....	....	36	71
72	....	1	....	....	....	....	....	....	....	....	1	....	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	72	72
73	....	1	....	2	....	7	....	....	....	....	5	....	....	64	....	....	4	....	....	....	1	....	....	....	....	1	8	....	....	....	....	114	73
74	1	....	....	....	....	....	....	....	....	....	....	....	1	60	....	....	2	....	....	....	....	....	....	....	....	....	1	....	....	....	1	80	74
75	1	....	....	....	....	....	....	....	....	....	3	....	....	121	1	....	13	....	1	1	1	1	3	....	....	....	6	1	....	....	6	169	75
76	....	1	....	....	1	....	....	....	....	....	3	....	....	214	....	....	5	....	....	....	....	....	....	....	....	....	5	1	....	....	....	276	76
77	....	....	....	....	....	....	....	....	....	....	....	....	....	39	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	2	46	77
78	....	....	....	2	....	....	....	....	....	....	9	1	....	....	52	....	2	....	2	1	3	....	....	....	1	....	....	1	....	....	1	93	78
79	3	4	....	2	....	4	....	1	....	....	1	1	1	3	....	23	....	....	....	2	....	....	....	....	10	1	3	1	....	10	2	82	79
80	....	....	....	2	....	....	....	....	7	....	1	....	....	3	....	....	62	1	....	....	....	....	....	1	1	....	....	....	....	1	....	85	80
81	....	4	5	3	....	3	....	1	49	....	24	58	....	11	....	4	285	4	9	....	1	....	3	4	3	5	7	2	....	15	8	556	81
82	1	1	....	....	....	....	....	....	24	....	5	2	1	2	....	1	215	1	....	....	1	1	1	....	1	1	2	2	....	1	14	297	82
83	....	....	....	....	1	....	....	....	2	....	2	....	....	....	....	....	29	....	....	1	3	....	....	1	....	....	....	....	....	....	3	63	83
84	2	....	1	1	1	3	....	....	18	....	11	24	....	3	....	1	141	....	1	....	3	....	4	7	1	3	1	....	....	1	4	276	84
85	1	....	....	....	....	....	....	1	3	....	15	5	....	3	....	....	28	1	1	....	....	1	1	1	1	1	....	....	....	....	2	78	85
86	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	100	....	....	1	....	....	....	....	....	....	1	....	....	....	....	103	86
87	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	72	....	11	....	....	....	....	1	....	....	....	....	....	82	87
88	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	24	....	....	....	....	....	....	....	....	....	12	88
89	....	....	....	....	....	....	....	....	....	....	....	7	....	....	1	....	....	....	....	....	....	24	....	....	3	....	....	....	....	....	....	43	89
90	....	....	50	1	....	1	....	....	....	....	....	2	....	1	9	....	....	....	....	....	....	77	21	....	....	....	....	....	....	....	....	212	90
91	....	....	2	....	....	....	....	....	....	....	2	10	....	....	4	....	....	....	4	....	3	3	....	....	4	....	3	....	....	....	1	53	91
92	....	....	34	10	7	....	....	....	1	....	3	23	....	....	4	....	....	....	24	....	42	47	....	....	4	....	3	....	....	....	31	354	92
93	2	1	12	7	....	....	....	....	....	....	2	1	1	1	2	....	....	....	4	....	109	57	....	....	2	1	....	3	....	....	....	294	93
94	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	45	....	....	....	....	....	....	....	....	....	56	94
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	

Marginal Number	NAME OF COLLEGE	1 Alabama 393	2 Arizona 13	3 Arkansas 138	4 California 416	5 Colorado 95	6 Connecticut 184	7 Delaware 23	8 Dist of Col 68	9 Florida 96	10 Georgia 235	11 Idaho 21	12 Illinois 1,218	13 Indiana 332	14 Iowa 322	15 Kansas 235	16 Kentucky 186	17 Louisiana 180	18 Maine 121	19 Maryland 297	20 Massachusetts 372	Marginal Number
95	Southern Methodist Univ., Med. Dept., Dallas																					95
96	Fort Worth School of Medicine, Fort Worth					1											1	12				96
97	University of Texas, Dept. of Med., Galveston	1	1	2						1	1			1		1		3	1			97
98	Univ. of Utah., School of Med., Salt Lake City											2										98
99	Univ. of Vermont., Coll. of Med., Burlington																		12		11	99
100	Univ. of Virginia, Dept. of Med., Charlottesville	2		1			1	1	1	1	1	1	1	1						3		100
101	Medical College of Virginia, Richmond						2		1	1	2							1		2		101
102	West Virginia Univ., School of Med., Morgantown																					102
103	University of Wisconsin Medical School, Madison												5	1						1		103
104	Marquette University, School of Med., Milwaukee					1							3		3	1						104
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

H.—Homeopathic; E.—Eclectic. * Exact distribution not given. † Figures are for 1913-14.

(*Continued from page 691*)

schools existing in any one year could be positively stated.[2] Table 8 allows of comparisons between the number of colleges existing in recent years.

TABLE 8.—MEDICAL COLLEGES

Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1850	44	3	4	1	..	52
1860	53	6	4	2	..	65
1870	60	8	5	2	..	75
1880	76	14	8	2	..	100
1890	106	16	9	2	..	133
1900	126	22	9	2	1	160
1901	125	22	10	2	1	160
1902	126	20	9	3	2	160
1903	126	20	9	3	2	160
1904	127	19	9	3	2	160
1905	125	19	9	3	2	158
1906	130	19	8	3	2	162
1907	127	18	9	3	2	159
1908	130	18	9	2	2	161
1909	115	15	8	1	1	140
1910	109	12	8	1	1	131
1911	103	12	7	..	..	122
1912	101	11	6	..	..	118
1913	92	10	5	..	..	107
1914	87	10	5	..	..	102
1915	83	8	4	..	..	95

Since June 30, 1914, one new college was organized and eight colleges (mentioned on page 698) have suspended or merged with others, leaving 95 medical colleges still existing. The number of colleges is the smallest since 1880, at which time began the rapid movement toward creating medical colleges, many of which were conducted for profit. The rapid increase in the number of colleges between 1880 and 1904 has been paralleled only by the rapid decrease since 1904. There has been a net decrease of 65 colleges since 1906, when there were 162, and when this country had about one-half of the world's supply of medical colleges. Ninety-two colleges have been closed by merger or otherwise since 1904, but in the same time twenty-five new colleges were organized, leaving 95 medical colleges which still exist. The net reduction has been 67 colleges, or 41.4 per cent.

The non-sectarian (regular) colleges number 83, a decrease of 4 since last year. The homeopathic colleges number 8, or 2 less than last year, and the eclectic colleges number 4, one less than last year. The non-sectarian colleges show a net reduction of 47, or 36.1 per cent., since 1906, when there were 130, the largest number of non-sectarian medical colleges. The homeopathic colleges show a net decrease of 14, or 63.7 per cent., since 1901, when 22, the largest number of homeopathic colleges, were in existence. The eclectic colleges show a net reduction of 6, or 60 per cent., since 1901, when there existed 10, the largest number of eclectic colleges.

2. Life Chart of the Medical Colleges in the United States, THE JOURNAL A. M. A., Aug. 23, 1913, p. 578.

TABLE 9.—COLLEGES CLOSED SINCE 1904

Year	Class A*		Class B		Class C		Totals		Total Closed
	Mgd.	Ext.	Mgd.	Ext.	Mgd.	Ext.	Mgd.	Ext.	
1905	8	1	..	..	..	..	8	1	9
1906	..	..	..	..	..	..	..	..	..
1907	..	..	1	..	3	..	6	4	10
1908	..	..	..	1	4	..	5	4	9
1909	..	..	..	..	7	..	7	5	12
1910	1	..	..	..	6	..	7	6	13
1911	..	..	1	3	4	3	7	7	14
1912	..	..	..	..	3	3	2	3	5
1913	..	..	6	1	1	2	10	4	14
1914	..	..	1	2	2	3	2	3	5
1915	1	..	1	2	1	3	3	5	8
Totals	23	1	20	4	9	35	52	40	92

* Based on the classifications of medical colleges prepared by the Council on Medical Education.

TABLE 10.—REDUCTIONS IN NUMBERS OF MEDICAL COLLEGES, STUDENTS AND GRADUATES

Numbers	Non-sectarian			Homeopathic			Eclectic			Totals		
	Colleges	Students	Graduates	Colleges	Students	Graduates	Colleges	Students	Graduates	Colleges	Students	Graduates
Largest	130	24,930	5,190	22	1,909	420	10	1,014	221	162	28,142	5,747
Present	83	15,514	3,289	8	736	195	4	241	55	95	14,891	3,536
Decrease	47	11,416	1,901	14	1,173	225	6	773	166	67	12,251	2,211
Percentage	36.1	44.2	36.6	63.7	61.4	53.6	60.0	76.2	75.1	41.4	47.1	38.4

FEWER BUT BETTER COLLEGES

Of the 92 medical colleges which have ceased to exist since 1904, 52 were closed by merger and 40 became extinct. It is noteworthy that this rapid diminution in the number of colleges began with the creation of the Council on Medical Education in 1905. The largest number closing in single years were 10

Marginal Number	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	Marginal Number
	Michigan....422	Minnesota....229	Mississippi....278	Missouri....398	Montana....25	Nebraska....216	Nevada....4	New Hampshire....42	New Jersey....353	New Mexico....8	New York....1,048	North Carolina 480	North Dakota....34	Ohio....719	Oklahoma....115	Oregon....53	Pennsylvania.1,140	Rhode Island....64	South Carolina 218	South Dakota....54	Tennessee....312	Texas....405	Utah....80	Vermont....74	Virginia....303	Washington....91	West Virginia....172	Wisconsin....387	Wyoming....8	Philippines, etc. 121	Foreign....458	Totals....18,851	
95	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	25	....	....	....	....	....	....	....	....	....	25	95
96	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	38	....	....	....	....	....	....	....	....	....	43	96
97	....	....	3	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	172	....	....	....	....	....	....	....	....	....	189	97
98	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	23	....	....	....	....	....	....	....	....	27	98
99	....	....	....	....	....	....	....	3	2	....	18	....	....	....	....	....	2	2	....	....	....	....	....	43	....	....	....	....	....	....	2	102	99
100	....	....	8	....	....	....	....	....	1	....	3	7	....	....	1	....	2	....	7	....	3	2	....	53	....	4	1	....	....	....	2	108	100
101	....	....	....	....	....	....	....	....	2	....	7	85	....	4	....	....	2	....	9	....	....	1	....	192	....	17	....	....	....	6	5	339	101
102	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	19	....	....	....	....	....	19	102
103	1	1	....	1	1	2	....	....	....	....	....	....	....	....	....	1	1	....	....	....	1	....	....	....	....	1	78	....	....	1	96	103
104	2	16	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	1	....	....	....	....	95	....	1	....	125	104
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	

in 1907, when the Council's first classification of medical colleges was prepared; 13 in 1910, when the second classification was published, and 14 in 1913, when the third classification was made public.

Of the 92 medical colleges which have been closed, 48 were rated by the Council on Medical Education in Classes A and B, and 44 in Class C. Note also that 43, or 95.5 per cent., of the closures of the medical colleges in Classes A and B were through merger with other colleges, while of the 44 Class C colleges which closed, only 9 (20 per cent.) were through merger with other colleges. In other words, all but five of the colleges which became extinct had been rated in Class C by the Council on Medical Education.

While the total number of colleges is growing smaller, however, and *approaching more nearly the normal supply for this country*, the high-grade, stronger medical colleges are constantly increasing. In 1904, only 4, or 2.5 per cent. of all medical colleges were requiring any preliminary education in advance of the usual high school education, now 83[3] (88.4 per cent.) are of advance college work. Of these 83 colleges, there are 39 which are requiring two years or more of collegiate work for admission and seven others have adopted the higher requirement to go into effect in the next one or two years. In 1904 very little was known about the practice of colleges in the administration of entrance standards, as at that time no systematic check was kept on the methods used; now, through the Students' Register, the standards actually enforced by each college are known, faulty methods or "paper standards" are discovered and corrected or exposed, and instead of being an unknown quantity, preliminary requirements are now known with fair accuracy.

FURTHER MERGERS NEEDED

There are still sixteen cities each of which has two or more medical schools, and in two of these mergers are scarcely possible, owing to the fact that the schools are for different races, leaving fourteen cities where mergers are still possible. These cities and the number of colleges in each are as follows: Chicago, 8; New York, 7; Philadelphia, 6; Boston, 4; San Francisco, 3; St. Louis, 3; Washington, 3, and there are 2 colleges each in Ann Arbor, Baltimore, Cincinnati, Columbus, Iowa City, Los Angeles and Omaha. In 1904 there were 24 cities having each from 2 to 14 medical schools. The highest development of medical education in these cities is prevented by the existence of too many competing medical schools. For the further improvement not only of undergraduate, but also of graduate medical instruction in this country, there should be other mergers in the fourteen cities named.

TABLE 11.—CITIES HAVING TWO OR MORE MEDICAL COLLEGES

City	A	B	C	Total
Chicago	3	2	2	8
New York	5	1	1	7
Philadelphia	3	1	..	6
Boston	3	..	1	4
San Francisco	2	..	1	3
St. Louis	2	..	1	3
Washington	3	..	..	3
Ann Arbor	2	..	..	2
Baltimore	2	..	..	2
Cincinnati	1	1	..	2
Columbus	1	..	1	2
Iowa City	2	..	..	2
Los Angeles	..	1	1	2
Memphis	..	1	1*	2
Nashville	1	1*	..	2
Omaha	1	1	..	2

* One school for the colored race.

LENGTH OF TERMS

The length of terms of each college fluctuates somewhat from year to year, but on the whole, during the

TABLE 12.—COLLEGE TERMS

Year	23 to 26 weeks		27 to 28 weeks		29 to 30 weeks		31 to 32 weeks		33 to 34 weeks		35 to 36 weeks		Over 36 weeks	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1902	44	28.4	44	28.4	11	7.1	33	21.3	3	1.9	18	11.6	2	1.3
1903	33	21.4	46	29.9	15	9.7	37	24.0	2	1.3	19	12.4	2	1.3
1904	21	16.3	44	26.3	22	13.2	37	22.3	13	7.8	30	17.9	3	1.8
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	28	23.8	3	1.9
1906	14	8.7	35	21.7	26	16.1	32	19.9	24	14.9	28	17.4	2	1.3
1907	6	3.7	27	16.8	26	16.1	42	26.1	29	18.0	29	18.0	2	1.3
1908	2	1.3	21	13.8	28	18.4	51	33.6	24	15.8	22	14.5	4	2.6
1909	4	2.3	17	11.6	23	16.4	51	34.9	18	12.3	30	20.5	3	2.5
1910	2	1.5	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1911	..	....	6	5.0	10	13.3	37	30.8	32	26.7	28	23.4	1	0.8
1912	1	0.9	1	0.9	11	9.5	34	29.3	37	31.8	31	26.7	1	0.9
1913	..	....	3	2.8	5	4.7	29	27.4	41	38.7	27	25.5	1	0.9
1914	..	....	2	2.0	4	4.0	25	24.8	41	40.5	28	27.7	1	1.0
1915	..	....	1	1.0	5	5.5	22	23.2	36	37.9	30	31.6	1	1.0

3. See list on page 704.

Name of College	Enrolled During 1914-15				
	1st Yr.	2d Yr.	3d Yr.	4th Yr.	Total
Birmingham Medical College	.....	.....	.....	49	49
University of Alabama, School of Medicine	9	25	18	13	65
Univ. of Arkansas, Med. Dept., Little Rock	27	13	13	24	77
College of Med. Evangelists, Loma Linda[1]	25	11	15	12	63
Cal. Eclectic Medical College, Los Angeles.—E.	4	5	1	2	12
College of Phys. and Surgs., Los Angeles	23	57	22	30	132
Oakland Coll. of Med. and Surg., Oakland	2	3	3	4	12
College of Phys and Surgs. of San Francisco	32	7	15	8	62
Hahnemann Med. Coll. of the Pacific.—H.[2]	7	13	15	10	45
Leland Stanford Junior Univ., School of Med.	27	25	27	16	95
University of California Medical School	50	40	30	13	123
University of Colorado, School of Medicine	15	23	13	8	59
Yale University, School of Med., New Haven	18	17	7	7	49
Georgetown University, School of Medicine	18	11	11	41	81
George Washington University Medical School	23	40	43	30	145
Howard University, School of Medicine	22	18	24	26	100
Atlanta Medical College, Atlanta	31	61	115	134	341
Georgia Coll. of Eclectic Med. and Surg.—E.	.....	.....	14	7	21
University of Georgia, Medical Dept.	14	20	8	12	54
Bennett Medical College, Chicago	32	81	135	145	393
Chicago College of Medicine and Surgery	54	109	222	154	539
Chicago Hospital College of Medicine[3]	.....	.....	.....	.....	60
Hahnemann Medical College and Hosp.—H.	9	34	30	23	86
Jenner Medical College, Chicago	79	52	14	30	175
Northwestern Univ. Med. School., Chicago	71	41	42	40	194
Rush Medical College, Chicago[4]	100	158	113	116	487
University of Illinois, College of Medicine	13	61	111	104	289
Indiana University, School of Medicine	50	40	35	27	152
State Univ. of Iowa, Coll. of Med., Iowa City	62	27	30	24	143
State Univ. of Iowa, Coll. of Homeo. Med. Iowa City.—H.	6	2	.....	3	11
University of Kansas, School of Medicine	33	40	13	15	101
University of Louisville, Med. Dept.	9	73	58	68	208
Tulane Univ. of Louisiana, School of Med.	71	55	74	86	286
Bowdoin Medical School, Brunswick-Portland	26	11	10	23	70
College of Phys. and Surgs. of Baltimore	13	28	48	61	140
Johns Hopkins University, Medical Dept.	91	90	91	91	363
University of Maryland, School of Medicine	32	95	116	104	347
Boston University, School of Medicine.—H.	15	31	19	21	86
College of Phys. and Surgs., Boston[5]	13	6	19	26	55
Medical School of Harvard University	78	70	62	89	319
Tufts College Medical School, Boston	77	101	68	59	305
Univ. of Michigan Medical School, Ann Arbor	100	89	73	45	307
Univ. of Michigan, Homeo. Med. School.—H.	21	13	13	21	68
Detroit College of Medicine and Surgery	17	88	46	46	197
University of Minnesota Medical School	75	61	36	36	208
University of Mississippi, Dept. of Medicine	26	19	.....	.....	45
University of Missouri, School of Medicine	39	26	.....	.....	65
Eclectic Medical Univ., Kansas City.—E.[5]	22	16	12	15	65
Kansas City Hahnemann Medical College.—H.	10	5	10	4	29
National University of Arts and Sciences, Medical Department	10	32	45	40	127
St. Louis College of Physicians and Surgeons	20	15	18	21	74
St. Louis University, School of Medicine	52	47	44	45	188
Washington Univ. Medical School, St. Louis	14	16	16	29	75
Lincoln Medical College, Lincoln.—E.[5]	5	11	8	5	29
John A. Creighton Medical College	14	46	42	46	148
University of Nebraska, College of Medicine	42	20	24	10	96
Dartmouth Medical School, Hanover	14	9	.....	.....	23
Albany Medical College, Albany	14	53	54	52	173
Univ. of Buffalo, Dept. of Med., Buffalo	30	68	58	55	191
Columbia Univ., College of Phys. and Surgs.	132	92	71	86	381
Cornell Univ. Med. Coll., New York City	54	28	22	20	124
Fordham University, School of Medicine	73	58	42	36	209
Long Island College Hospital, Brooklyn	32	84	90	79	285
New York Homeopathic Medical College and Flower Hospital.—H.	53	51	62	76	242
New York Medical College and Hospital for Women.—H.	5	12	12	9	38
University and Bellevue Hospital Medical College, New York City	150	70	46	98	364
Syracuse University, College of Medicine	30	33	24	13	100
University of North Carolina, School of Med.	53	27	.....	.....	80
North Carolina Medical College, Charlotte[6]	.....	23	8	21	52
Leonard Medical School, Raleigh	.....	6	.....	5	11
Wake Forest College, School of Medicine	16	10	.....	.....	26
University of North Dakota, School of Med.	8	9	.....	.....	17
Eclectic Medical College, Cincinnati.—E.	36	27	25	26	114
University of Cincinnati, College of Medicine	21	18	21	20	80
Western Reserve University, School of Med.	52	31	52	34	169
Ohio State University, College of Medicine	41	83	62	45	231
Ohio State Univ., Coll. of Homeo. Med.—H.	14	6	7	19	46
University of Oklahoma, School of Medicine	21	26	16	26	93
University of Oregon, Dept. of Med., Portland	33	13	16	20	82
Hahnemann Medical College and Hospital of Philadelphia.—H.	10	34	18	23	85
Jefferson Medical College of Philadelphia	134	130	147	145	556
Medico-Chirurgical College of Philadelphia	30	91	80	96	297
Temple Univ., Dept. of Medicine, Philadelphia	1	17	15	30	63
University of Pennsylvania, School of Med.	87	58	74	57	276
Woman's Medical College of Pennsylvania	8	20	26	24	78
University of Pittsburgh, School of Medicine	46	21	25	11	103
Medical Coll. of the State of South Carolina	15	24	18	25	82
University of South Dakota, College of Med.	7	5	.....	.....	12
Lincoln Memorial University, Medical Dept.[7]	.....	12	19	12	43
University of Tennessee, College of Medicine	13	54	70	75	212
University of West Tennessee, College of Medicine and Surgery[8]	2	4	18	29	53
Meharry Medical College, Nashville	72	108	83	91	354
Vanderbilt University, Med. Dept., Nashville	30	88	78	98	294
Baylor University, College of Medicine, Dallas	12	5	15	24	56
Southern Methodist University, Med. Dept.	6	3	9	7	25
Fort Worth School of Medicine	8	19	3	13	43
University of Texas, Department of Medicine	60	62	33	34	189
University of Utah, School of Medicine	20	7	.....	.....	27
University of Vermont, College of Medicine	29	16	16	41	102
University of Virginia, Dept. of Medicine	34	24	24	26	108
Medical College of Virginia, Richmond	42	111	83	103	339
West Virginia University, School of Medicine	5	14	.....	.....	19
University of Wisconsin Medical School	54	42	.....	.....	96
Marquette University, School of Medicine	21	12	47	45	125
Totals, 1914-15	3373	2919	2675	2864	14891
Totals, 1913-14	4684	3981	3807	3955	16502
Decrease	1311	62	132	91	1611

1. There were respectively 3 and 22 students in the classes of the first and second years of the five-year course. 2. Figures by classes are approximate; total is exact. 3. Figures are approximate. 4. There were 258 students in the first two classes; division in each class approximate. 5. Figures are for 1913-14. 6. Students being taught at the Medical College of Virginia, Richmond. 7. Students being taught at the University of Tennessee, College of Medicine, Memphis.

This table shows for all colleges, except one, the number of students enrolled in each of the four classes. Eleven colleges teach only the first two years of the medical course. The Georgia College of Eclectic Medicine and Surgery, the Lincoln Memorial University and the North Carolina Medical College had students only in the last three classes. Birmingham Medical College had only seniors and graduated its last class.

The largest first year classes are found at the University and Bellevue Hospital Medical College, 150; Columbia University, College of Physicians and Surgeons, 132; Rush Medical College and the University of Michigan Medical School, each 100; Harvard University, Medical School, 98, and Johns Hopkins University, Medical Department, 91. The smaller enrolments in the first and second year classes of the Atlanta Medical College, Bennett Medical College and the Chicago College of Medicine and Surgery, mark the beginning of a more rigid requirement of a four-year high school course for admission.

The totals for the previous session are also given to permit of comparison. The marked reduction in the number of first year students is due to the general adoption of higher entrance standards. This was done at the beginning of the last session by forty-three colleges. Sixty students (of the Chicago Hospital College of Medicine) have been figured in the total (14,891) which are not shown by classes.

The six colleges having the largest enrolments are Jefferson Medical College, 556; Chicago College of Medicine and Surgery, 539; Rush Medical College, 487; Bennett Medical College, 393; Columbia University, College of Physicians and Surgeons, 381, and the University and Bellevue Hospital Medical College, 364.

last twelve years there has been a decided lengthening of college terms. This has reference to the weeks of actual work exclusive of holidays. Only one college this year reported sessions shorter than twenty-nine weeks, whereas in 1901, one hundred colleges reported sessions of from twenty-three to twenty-eight weeks. Five colleges claim courses of twenty-nine or thirty weeks of actual work, twenty-two claim courses of thirty-one or thirty-two weeks, and thirty-six, the largest number, claim courses of from thirty-three to thirty-four weeks. Of the 96 colleges now existing, 89, or 92.7 per cent., now claim to require from thirty-one to thirty-eight weeks of actual work, exclusive of holidays, as compared with 30 per cent. in 1901.

TUITION AND OTHER FEES

Special attention is called in Table 1 on page 688 to the total amount charged by the various colleges per annum for tuition, matriculation, laboratory and graduation fees for each student. In Table 13 the 95 remaining colleges have been grouped according to the amount of fees charged and according to their

classification by the Council on Medical Education in Class A, B and C. Nineteen colleges charge fees of $100 or less per year; fifty-two between $100 and $175, and twenty-four charge above $175. Of the nineteen colleges charging $100 or less, twelve, or nearly two-thirds, were listed among Class A (acceptable) colleges[4] by the Council on Medical Education, four were Class B and three of them are found among the Class C colleges. Among the eight Class A colleges having these low fees are the schools of medicine of the state universities of Colorado, Mississippi, Missouri, North Dakota, South Dakota, Texas and Utah. On the other hand, eight colleges listed by the Council in Class C charge fees of from $100 to $175 per year for each student. As shown on page 704, diplomas from Class C colleges are reported as not recognized by thirty-two state licensing boards. It is a question, therefore, why a student should spend his time and money in a low-grade college the diplomas of which are not recognized by many states,[5] when in the same time and with even less money he can attend one of the best-equipped colleges, the diplomas of which are recognized in all states. Although thirty-seven colleges

TABLE 13.—COLLEGE FEES

Total Fees	Number of Colleges			
	Class A*	Class B	Class C	Total
$ 50 or less	3	3	..	6
50 to $ 75	5	1	2	8
75 to 100	4	..	1	5
100 to 125	7	3	1	11
125 to 150	10	5	5	20
150 to 175	14	4	2	20
175 to 200	15	1	..	16
200 or above	8	..	..	8
Totals	66	17	12	95

* Based on the latest classification of medical colleges prepared by the Council on Medical Education (see page 703).

listed in Class A charge fees ranging from $150 to $275 per year for each student, the actual expense for teaching that student in these colleges amounts to from two to three to several times these sums. In fact, accurate data secured from sixty-five medical colleges this year, shows that the average amount received each year from the individual student was $138, while the average amount actually expended in the training of that student for a year was $382! And reports have not yet come in from about twenty colleges which are well endowed, which would make the difference even more marked.

In this connection, a glance at Table 1 on page 688 will show that many of the Class A colleges have only from 7 to 75 students in each class, or totals of from 50 to 300 enrolled, when they could easily care for classes of 50 to 100, or total enrolments of 200 to 400 each. It is quite evident, therefore, that with the same equipment and at practically no additional expense these schools could easily accommodate two, three, or in some instances several times the number of students at present enrolled, which would greatly reduce the disproportion of expense over income from fees. A further reduction in the vast oversupply of medical schools in this country, therefore, would be in the interests of economy as well as of marked advantage to medical education.

4. See classification on page 703.

5. See also in THE JOURNAL of April 24, 1915, p. 1412, the table showing in what states the diplomas of the various medical colleges are not given full recognition.

COLLEGES, STUDENTS AND GRADUATES BY STATES

Illinois has heretofore had the largest number of medical colleges, but now, as shown in Table 14, the first place is held by New York, where there are ten

TABLE 14.—MEDICAL COLLEGES, STUDENTS AND GRADUATES BY STATES

State	College		Students		Graduates		Graduates with B.S. or A.B.
	Total	Class C	Men	Women	Men	Women	
Alabama	1	..	114	...	57	...	4
Arkansas	1	..	75	2	19	...	1
California	6	2	483	71	77	11	30
Colorado	1	..	55	4	7	1	4
Connecticut	1	..	49	...	7	...	7
Dist. of Columbia	3	..	222	3	76	...	18
Georgia	3	1	416	...	134	...	6
Illinois	8	2	2,093	120	484	21	131
Indiana	1	..	150	2	26	2	18
Iowa	2	..	152	2	26	...	9
Kansas	1	..	98	3	13	1	13
Kentucky	1	..	208	...	68	...	4
Louisiana	1	..	285	1	78	...	20
Maine	1	..	70	...	22	...	7
Maryland	2	..	817	31	214	5	95
Massachusetts	4	1	705	60	173	16	92
Michigan	3	..	541	31	103	5	38
Minnesota	1	..	201	7	20	...	17
Mississippi	1	..	45	...	...	...	...
Missouri	5	2	602	21	145	7	25
Nebraska	3	1	261	12	59	4	13
New Hampshire	1	..	23	...	...	...	...
New York	10	1	2,041	76	484	13	107
North Carolina	3	..	168	1	19	...	...
North Dakota	1	..	17	...	...	...	...
Ohio	5	1	623	17	140	5	51
Oklahoma	1	..	92	1	20	...	2
Oregon	1	..	78	4	18	...	1
Pennsylvania	7	..	1,395	93	337	33	74
South Carolina	1	..	82	...	23	...	11
South Dakota	1	..	12	...	...	...	...
Tennessee	4	1	946	10	273	2	28
Texas	3	..	502	11	66	4	10
Utah	1	..	27	...	...	...	...
Vermont	1	..	102	...	41	...	2
Virginia	2	..	447	...	114	...	9
West Virginia	1	..	16	3	...	...	...
Wisconsin	2	..	215	6	44	...	1
Totals	95	12	14,299	592	3,406	130	858

colleges. Illinois has eight; Pennsylvania has seven and California has six colleges. Illinois still has the largest number of students enrolled, having 2,213 matriculants last session, followed by New York with 2,117 and Pennsylvania with 1,458. In regard to the graduates, the same relative position obtains.

Table 15 shows the colleges existing during the last session and their students and graduates grouped according to their rank in the classification of the Council on Medical Education. As will be noted, there were sixty-seven colleges in Class A, twenty-two

in Class B and fifteen in Class C. It is encouraging to note that 76 per cent. of all students were enrolled in the 64.4 per cent. of colleges which are in Class A, and that these colleges turn out 74.4 per cent. of all

TABLE 15.—STATISTICS ACCORDING TO COLLEGE CLASSIFICATION

	Colleges*		Students		Graduates	
	No.	Per Cent.	Number	Per Cent.	Number	Per Cent.
Class A	67	64.4	11,314	76.0	2,629	74.4
Class B	22	21.2	2,668	17.9	688	19.4
Class C	15	14.4	909	6.1	219	6.2
	104	100.0	14,891	100.0	3,536	100.0

* Includes 9 colleges which will hold no more sessions.

graduates. At the other extreme, only 6.1 per cent. of all students and 6.2 per cent. of all graduates were from the 14.4 per cent. of colleges rated in Class C.

EFFECT OF HIGHER ENTRANCE STANDARDS

Of the 100 medical colleges which held sessions during 1914-15, eighty-two put into effect the requirements for admission of one or more years of collegiate work, in addition to a high school education. In thirty-nine the higher requirement began in 1914—at the beginning of the last college session—and, with one exception, these colleges, as shown in Table 16, had decreased enrolments. In forty-three colleges, however, the higher requirement was put into effect in 1913 or earlier and all but five report either increased enrolments or larger freshman classes. This indicates that after a year or so has been allowed for readjustments under the higher preliminary requirements, the enrolments of freshman students are inclined to show an increase.

TABLE 16.—VARIATIONS IN MEDICAL COLLEGE ENROLMENTS

Figures showing numbers of colleges having enrolments in the session of 1914-15, respectively, larger, equal or smaller than in the session of 1913-14.

Total Registration This Year	Medical Colleges Requiring for Admission					
	Two Years of College Work, Effective in		One Year of College Work, Effective in		High School Course	Total Colleges
	1913 or Previous	In 1914	1913 or Previous	In 1914		
Increased	24	..	8	1	4	37
Equal	2 (1)	..	..	..	2	4
Decreased	5 (3)	3	4 (2)	35	12	59
Totals	31	3	12	36	18	100

Figures in parenthesis show number of colleges which, although the total enrolment was diminished, had larger freshman classes than a year ago.

The marked reduction in the enrolments of the first year classes this year were due to the general adoption, by medical colleges of higher entrance standards. This is evidenced by the fact that the majority of medical colleges which had previously adopted the higher standards had equal or increased enrolments.

COLLEGE NOTES

Colleges Closed During the Year.—Seven medical colleges have been reported as closed during the year, of which two were closed by merger with other colleges and five ceased to exist. The colleges are:

Birmingham Medical College, Birmingham, Ala. This college has been converted into a graduate school and has discontinued undergraduate teaching.

California Eclectic Medical College, Los Angeles. This college is reported closed.

Hahnemann Medical College of the Pacific, San Francisco. This college is reported to have transferred its property to the Medical School of the University of California, where elective courses in homeopathic materia medica and homeopathic therapeutics will be offered.

College of Physicians and Surgeons of Baltimore. This school has merged with the University of Maryland, School of Medicine, but a joint title will be retained: "The University of Maryland, School of Medicine, and the College of Physicians and Surgeons."

Kansas City Hahnemann Medical College, Kansas City, Mo. This college has been suspended.

Cleveland-Pulte Medical College, Cleveland, Ohio. This college has been closed and its property is said to have been transferred to the Ohio State University.

Southern Methodist University, Medical Department, Dallas, Texas. This college has been suspended.

New College Organized.—One new college was organized during the year. This was the Ohio State University, College of Homeopathic Medicine, Columbus, Ohio.

Special Items Concerning Medical Education

Arkansas.—The Arkansas legislature appropriated $65,000 for the Medical Department of the University of Arkansas for the next biennium and also passed a bill providing for a state hospital to be erected at Little Rock and conducted in connection with the university.

California.—The College of Medical Evangelists, Loma Linda-Los Angeles, will require two years of college work for admission beginning with the session of 1915-16.

——Beginning with the session of 1916-17 two years of college work will be required for admission by the College of Physicians and Surgeons, Medical Department of the University of Southern California, Los Angeles.

——Definite provision has been made for an endowment sufficient to yield an annual income of $1,200 in perpetuity for the maintenance of the position of research associate in pathology at the University of California.

Connecticut.—The Yale University, School of Medicine, received $25,000 for the further endowment of the University Clinic and $5,100 for the establishment of the Ramsey memorial scholarship. Work has been begun on a three story and basement building to be known as the Anthony N. Brady Memorial Laboratory.

Georgia.—The Emory University has taken over as its medical department the Atlanta Medical College, provided an endowment of $250,000 and agreed to erect a teaching hospital to cost from $200,000 to $300,000 on or near the college property.

——The sum of $25,000 was given to the University of Georgia, Medical Department, to be known as the William J. Young library fund, the income from which is to be used in the improvement and development of the library.

Illinois.—A sum of $27,000, to cover eight full courses, was given to Northwestern University Medical School by James A. Patten.

——The Illinois House of Representatives appropriated $5,000,000 for the University of Illinois, about $100,000 of which will be utilized, it is said, for the erection of a new clinical building in Chicago.

Indiana.—A gift of $100,000 to be used in scientific research was received from Dr. Luther D. Waterman by the Indiana University.

——The additional sum of $10,000 has been given to the Robert W. Long Hospital, the teaching hospital of the Indiana University, School of Medicine, by Dr. and Mrs. Robert W. Long.

Kansas.—The state appropriated $25,000 for a new laboratory building for the School of Medicine of the University of Kansas. The school was given eighteen and a half lots in the city of Rosedale by Dr. Marshall A. Barber.

Louisiana.—Tulane University of Louisiana has granted all the privileges of the medical college to women students.

Maine.—The Bowdoin Medical School, formerly known as the Medical School of Maine, will require two years of college work for admission beginning with the session of 1916-17.

Maryland.—Plans have been made for an addition to the medical laboratory of the Johns Hopkins University, the cost to be $50,000. A sum of $16,500, to be paid in three yearly installments, has been provided for the Johns Hopkins Hospital by John D. Rockefeller, Jr., the money to be used in a special social hygiene department to be established in September.

Massachusetts.—The Boston University, School of Medicine, will require two years of collegiate work for admission for the session of 1916-17 and thereafter. The school has received $100,000 for a maternity hospital to be erected on a site near its campus. The sum of $5,000 was provided by the will of Dr. Alema J. Flint.

——The Medical School of Harvard University has received a contingent bequest of $50,000 by the will of Dr. William H. Baker, the money to be used for the endowment of a chair to be known as the William H. Baker chair of gynecology. The will of Mrs. Endicott provides $25,000, the income from which is to be used for cancer investigation work. Mrs. Helen Collamore bequeathed to the university $20,000 for three perpetual beds to be added to the Collamore ward. Another gift of $10,000 for the endowment of a scholarship in the medical department was received by the will of Fannie Bartlett. There has been started a campaign for $150,000 for the endowment of a chair of mental disease, the plan including provision for a full-time professor.

Missouri.—By the will of James Campbell, his estate, valued at from $6,000,000 to $10,000,000, is bequeathed to the St. Louis University, School of Medicine, subject to the life tenure of his wife and daughter.

——A contingent bequest estimated at more than $1,000,000, to be used in the establishment of an eye, ear, nose and throat hospital in connection with the Washington University Medical School, was provided by the will of Mrs. William McMillan.

Nebraska.—The Nebraska legislature appropriated $150,000 for a state hospital to be used as the teaching hospital of the College of Medicine of the University of Nebraska.

New York.—Plans for a new medical plant in connection with Columbia University have been announced. The share of the Presbyterian Hospital in the project will be $9,200,000 and the university is to raise $7,500,000. The Vanderbilt clinic will be rebuilt as a part of the new hospital included in the plans and provision will be made for the permanent location of the George Crocker Cancer Research Foundation. A gift of $113,750 from William K. Vanderbilt has enabled the university to purchase the site for the new school. A sum of $100,000 has been received for research in cancer by the will of Emil C. Bondy. Under the will of William Douglas Sloane $50,000 was provided for the Sloane Maternity Hospital. Two gifts, one amounting to $4,000 and the other to $2,500, were received for surgical research. Two thousand dollars was given for the department of physiology, and a like amount for the Frank Hartley scholarship fund.

——The John Arbuckle Memorial, which cost $250,000 and which completes the north wing of the Long Island College Hospital, has been opened.

——The New York Homeopathic Medical College and Flower Hospital received $5,000 for the establishment of a bed in the hospital and $1,000 for the students' endowment fund by the will of Miss Thena M. Mills.

——The New York Medical College and Hospital for Women received $10,000 by the will of William Washington Cole.

——The Syracuse University, College of Medicine, has taken over the Hospital of the Good Shepherd as a teaching institution.

Ohio.—The Ohio State University, College of Medicine, will require two years of collegiate work for admission for all students matriculating in the session of 1915-16 and thereafter.

——The new Cincinnati General Hospital, which cost $4,500,000, and which took four years to build, has been opened. The departments of pathology, bacteriology, physiology and biochemistry of the University of Cincinnati, College of Medicine, are housed on the grounds.

——The University of Cincinnati, College of Medicine, was offered $250,000 for a new building by Mrs. Mary M. Emery, on the condition that the institution raise a like amount before July 1. On that day $255,000 had been secured. A sum of $1,000 for running expenses was given the school by Charles Boldt.

Oregon.—The University of Oregon, Department of Medicine, has raised most of the sum of $25,000, on the securing of which the $50,000 appropriated by the state for a new building becomes available.

Pennsylvania.—The Hahnemann Hospital of Philadelphia received a contingent bequest of $5,000 by the will of Charles R. Paul.

——Jefferson Medical College is to receive $100,000 under the will of Josephine Lewis for the endowment fund providing the institution secures an equal amount. The Jefferson Hospital received a contingent bequest of $15,000 for the establishment of three beds by the will of Annie Wilson. The Corinna Borden Keen Research Fellowship has been established by Prof. William W. Keen in the Jefferson Medical College, with the provision that the recipient shall spend at least one year in research work. The income from the gift now amounts to $1,000.

——The University of Pennsylvania received $50,000 by the will of Miss Anna M. Blanchard. A sum of $50,000, the income from which is to be used for the maintenance of the William Pepper Clinical Laboratories, was provided by the will of Samuel Dickson.

——The Woman's Medical College of Pennsylvania received $10,000 from the Shipper estate. Five thousand dollars was received by the will of Mrs. Anna Yarnall. A gift of $5,000 was received for the Edith E. Keisher scholarship fund and another sum of $225 for a scholarship fund. The Woman's Hospital secured $5,000 by the will of Robert H. Crozer and the income from $3,000 by the will of Edward T. Dobbins. An endowment fund of $2,000 was also obtained.

South Carolina.—Commencing with the session of 1916-17, the Medical College of the State of South Carolina will require two years of collegiate work for admission. The college received $1,000 under the will of Mrs. Salina Huger, the income to be used in the purchase of books on diseases of children for the college library.

Tennessee.—The building formerly occupied by the Medical Department of the University of Nashville, estimated to be worth about $50,000, has been purchased by William Litterer and donated to the Vanderbilt University. The building, it is said, is to be remodeled and used for teaching and research in bacteriology. The university is also planning to erect a laboratory building to cost $250,000 and another building to cost $350,000.

Texas.—A Woman's Hospital, costing $125,000, has been erected on the grounds of the John Sealy Hospital, which is connected with the Medical Department of the University of Texas, by Mrs. R. Waverly Smith and her brother John Sealy. A new nurses home, costing $90,000, has been completed by the University of Texas.

West Virginia.—The School of Medicine of West Virginia University will require two years of collegiate work for admission for all students matriculating in the session of 1917-18 and thereafter.

——Contracts have been let for a new building for the School of Medicine of West Virginia University, the cost to be $57,000.

Wisconsin.—In accordance with an amendment to its medical practice act, Wisconsin's requirements of preliminary education will include two years of college work beginning with the session of 1915-16. This will apply to all graduates of 1919 and thereafter.

——The requirements for admission to Marquette University, Schol of Medicine, will be increased to two years of collegiate work beginning with the session of 1915-16. Subscriptions to the endowment fund have been received to the amount of $150,000.

Foreign

Canada.—Dalhousie University, Faculty of Medicine, received $30,000 toward the endowment of a chair of anatomy.

Colombia.—According to a recent decree of the government, a foreign physician, in order to become licensed, must present a diploma from a recognized foreign college; must submit to a clinical examination; and must present a thesis on some national medical theme, on which the medical council will require the applicant to explain orally what may seem to the council proper in a public examination.

STANDARDS OF THE COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION

Essentials of an Acceptable Medical College

(Revised to Aug. 1, 1915)

The following outline of the essentials of an acceptable medical college was issued by the Council on Medical Education of the American Medical Association for its suggestive value in the rapid development in progress among the medical colleges in the United States. It also represents the basis on which medical colleges are rated in the Council's classifications.

ADMISSION OF STUDENTS

1. A strict enforcement of the following standards and requirements, the college itself to be held responsible for any instances in which they are not enforced.

[Since the product of the medical school depends largely on the quality of the students admitted, in rating medical colleges, special emphasis is laid by the Council on the strictness and honesty by which the standards of admission and advanced standing are administered. By the admission of unfit students the school is handicapped from the very beginning and, in the opinion of the Council, deserves a low rating regardless of its equipment, its clinical facilities and its teaching force.]

2. A requirement for admission of a four-year high school education, and in addition at least one year of college work, including eight semester hours each of physics, chemistry and biology of college grade and a reading knowledge of German or French.

3. These minimum requirements[1] for admission to the study of medicine are set forth in the following statements relating to high school requirements and to the work of the preliminary college year or years:

I. HIGH SCHOOL REQUIREMENTS

(a) For admission to the preliminary college year, students must have completed a four-year course of at least fourteen units in a standard accredited high school or other institution of standard secondary school grade, or have its equivalent as demonstrated by an examination conducted by a duly authorized examiner of the College Entrance Examination Board, or by the authorized examiner of a standard college or university which has been approved by the Council on Medical Education, or by an examiner whose certificates are accepted by such approved standard colleges or universities. A detailed statement of attendance at the secondary school, and a transcript of the student's work should be kept on file by the medical school authorities. This evidence of actual attendance at the secondary school or schools should be obtained for every student no matter whether he is admitted to the freshman or to advanced classes. This information regarding high school education should be kept separate from the transcript of college work described below.

(b) The subjects for which credits for admission to the preliminary college year may be accepted are shown in the accompanying schedule.

II. WORK OF THE PRELIMINARY COLLEGE YEAR

(c) The preliminary college year, which is the present minimum requirement for admission to medical schools, shall extend through one college session of at least thirty-two weeks of actual instruction, including final examinations. Its purpose is to provide the student with a training that will enable him to enter more intelligently on the study of the fundamental medical sciences.

(d) In excellence of teaching and in content, the work of this preliminary college year shall be at least equal to the work done in the freshman year in standard colleges and universities which enforce for admission at least fourteen units of accredited high school work, and exact for graduation at least 120 semester hours[2] of collegiate work.

(e) This preliminary college year shall consist of at least thirty semester hours,[2] fully completed before the student enters the medical school. This is entirely in addition to the fourteen units of secondary school work. Each student before being admitted to the medical school must have fully completed fourteen (14) units of high school work and at least thirty (30) semester hours of college work. If the college work did not include the specified subjects, as shown in (f), the students must be required to remove such conditions as are permitted in those subjects by *additional* college work. Additional college credits are necessary also, to make up any deficiencies there may be in high school credits. For example, if a student completed only three years of high school work before entering "college," then two years of collegiate work (60 semester hours) must be required before he is admitted to the medical school.

(f) This preliminary college year shall include courses in physics, chemistry and biology, each course to embrace at least eight semester hours of didactic and laboratory work as shown in the accompanying schedule, provided that the

SCHEDULE OF SUBJECTS OFFERED IN ACADEMIC AND SECONDARY SCHOOLS, CREDITS IN WHICH ARE ACCEPTABLE FOR ENTRANCE TO THE PRELIMINARY COLLEGE YEAR LEADING TO THE MEDICAL COURSES

SUBJECTS	UNITS	REQUIRED	ELECTIVE
ENGLISH			
Reading and Practice	2	2	...
Study and Practice	1	...	1
MATHEMATICS			
Algebra to Quadratics	1	1	...
Algebra (Quadratic Equations, Binominal Theorem and Progressions)	½	...	½
Plane Geometry	1	1	...
Solid Geometry	½	...	½
Trigonometry	½	...	½
LATIN			
Grammar and Composition	1	*	1
Caesar	1	*	1
Cicero	1	...	1
Virgil	1	...	1
Cornelius Nepos	1	...	1
Greek			
Grammar and Composition	1	*	1
Xenophon	1	*	1
Homer	1	...	1
German (or French)			
Elementary	2	2*	...
Intermediate	1	...	1
Other Foreign Language			
Elementary	2	...	2
HISTORY			
American History and Civil Government	1	1	...
Greek and Roman History	1	...	1
Medieval and Modern History	1	...	1
English History	1	...	1
Science †			
Botany and Zoology, each	1	...	1
or Biology	1	...	1
Chemistry	1	...	1
Physics	1	...	1
Physiography	½	...	½
Physiology	½	...	½
Agriculture	1	...	1
Drawing	1	...	1
Manual Training	1	...	1
Domestic Science	1	...	1
Music			
Appreciation or Harmony	1	...	1
Total	33½	7	26½

A *unit* is the credit value of at least 36 weeks' work of 4 or 5 recitation periods per week, each recitation period to be of not less than 40 minutes. In other words, a unit represents a year's study in any subject in a secondary school constituting approximately a quarter of a full year's work. A satisfactory year's work in any subject cannot be accomplished under ordinary circumstances in less than 120 sixty-minute hours, or their equivalent.

Required Branches: Of the 14 units of high school work it is suggested that the subjects in capitals aggregating 7 units be required. Other work to the amount of at least 7 units may be made up from any of the other subjects of the above schedule.

* Two units of Greek or Latin may be substituted for the two required units of French or German.

† Credentials of each science course must include evidence of laboratory work.

1. The requirements here given were prepared by a joint committee representing the Council on Medical Education and the Association of American Medical Colleges, assisted by Dr. Kendric C. Babcock, formerly Specialist in Higher Education of the United States Bureau of Education.

2. A semester hour is the measurement of work represented by one class period per week for half of the college year. Each laboratory period to be so valuated must extend over at least two hours.

requirement in biology may be satisfied by presenting six semester hours of college zoology, or by presenting one unit of high school biology, including laboratory work, and completing four semester hours of college zoology; and provided that the requirement in physics may be satisfied by presenting one unit of high school physics, including laboratory work, and completing four semester hours of college physics which continues and does not duplicate the work done in high school. Under no arrangement, however, should there be a total of less than thirty semester hours of college work. It is strongly urged that these include six semester hours of a modern language other than English, preferably French or German.[3]

(g) Credits for two or more years of collegiate work cannot be considered *fully* acceptable unless courses in physics, chemistry and biology, as described above, have been completed. It is urged that a reading knowledge of French or German also be required.

SCHEDULE

Subject	Lectures or Recitations per Week	Laboratory Periods† per Week	Total Hours per Semester	Total Semester Hours per Year
Physics, 1....	2 or 3	2 or 1	4	8
Chemistry, 1..	2	2	4	8
Biology, 1....	2 or 3	2 or 1	4	8
(or Zoology, 1)*				
Elective, preferably	(1)	(2)	(3)	(6)
French or German, 2*.	4 or 3	.....	4 or 3	8 or 6
Totals.....	9 or 11	6 or 5	16 or 15	32 or 30

* See paragraph (*f*).
† Each laboratory period must extend over at least two hours.

(h) Medical schools which aim to give a premedical year, including these science courses, should admit only those students who have completed at least fourteen units of unconditioned high school work,[4] should provide expert full-time teachers in the various subjects in addition to the regular staff of the medical school; should provide standard laboratory equipment; and should provide a training in the subjects of the premedical year no less thorough than that given in standard colleges of liberal arts and the total work of this premedical year should amount to at least thirty semester hours of non-medical subjects.

(i) Postgraduate courses given in high schools cannot be considered equal to college courses given by college teachers, unless such postgraduate courses are definitely organized on a junior college basis, and credits for work done in them regularly recognized and accepted by a state university or other university of similar rank, approved by the Council.

(j) A year of work in a college of medicine, dentistry, pharmacy, or other professional college is not considered as an equivalent to the required premedical college year.

III. ENTRANCE CONDITIONS UNTIL JAN. 1, 1917[5]

(k) A student may be admitted with certain subject conditions provided he has completed at least one year [thirty semester hours, see paragraph (e)] of work in an approved college of liberal arts or science, provided no conditions may be permitted in the prescribed eight semester hours of college chemistry. These conditions may be either in (1) or (2), but not in both: (1) In one-half (four semester hours) of the required course in physics, or, (2) in one-half of the required course in biology (four semester hours), or in zoology (three semester hours). These conditions must be removed before the beginning of the work of the second medical year and the credits for these conditions must be in addition to the required thirty semester hours.

(l) A candidate who has completed two or more years of work in an approved college of liberal arts, or science, may be admitted conditioned in all of the required work in physics, or one-half of the work required in biology, to a total not to exceed eight semester hours. These conditions must be removed before the beginning of the second medical year. No condition may be permitted in the prescribed eight semester hours of college chemistry.

(m) A candidate who holds a baccalaureate degree from a standard four year college or university approved by the Council on Medical Education may be admitted, in the fall of 1915 only, conditioned in all the physics or all the biology or in one-half of the physics and one-half of the biology, the total condition not to exceed eight semester hours. After 1915 only one-half of the biology (four semester hours) and one-half of the physics, or in all of the physics, the total not to exceed eight semester hours, may be carried as a condition. These conditions must be removed before the beginning of the second medical year. No condition may be permitted in the prescribed eight semester hours of college chemistry.

(n) Since the medical course demands the full energy of the student, especially in the freshman year, all deficiencies should be removed, so far as possible, during the summers preceding and following the freshman medical year.

(o) A medical school having students who were conditioned on entrance in 1914-15, under the former regulations, are entitled to have conditions of such students brought into conformity with the rulings here announced without prejudice to its standing.

4. The college should require that students be in actual attendance in the college within the first week of each annual session and thereafter.

5. Actual attendance at classes should be insisted on except for good cause, such as for sickness, and under no circumstances should credit be given for any course where the attendance has been less than 80 per cent. of the full time.

6. (*a*) Full advanced standing may be granted to students only for work done in other acceptable colleges and in granting advanced standing there should be no discrimination against the college's full-course students. (*b*) In *exceptional cases* students from Class B medical schools may be given advanced standing but not higher than *entrance* to the third year (junior) class and no credit should be given in any subject except on recommendation of the head of the department teaching that subject. (*c*) In *exceptional cases* students from Class C colleges may be given advanced standing but not higher than *entrance* to the second year (sophomore) class and then only after thorough examinations in all first year subjects have been passed.

SUPERVISION, EQUIPMENT, TEACHERS

7. There should be careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out fair ideals of medical education as interpreted by modern knowledge.

8. There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students by means of which an exact knowledge can be obtained regarding each student's work. Records should also be kept showing readily the attendance of patients at the teaching hospitals and dispensaries; the maternity cases attended by students and the post-mortem cases used in teaching.

9. The college should have a fully graded course covering four years of at least thirty-two weeks each, exclusive of time required for matriculation and holidays, and at least thirty hours per week of actual work; this course should be clearly set forth in a carefully prepared and printed schedule of lectures and classes.

(*a*) The college should give two years of work consisting largely of laboratory work in thoroughly equipped laboratories in anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics and clinical diagnosis. Present-day medical knowledge makes it essential that these subjects be in charge of full-time, well-trained teachers.

3. The inclusion of French or German is required for entrance to institutions which are members of the Association of American Medical Colleges.
4. Part courses or uncompleted courses are not to be accepted.
5. Deficiencies in preparation may be made up in large part in attendance at a summer session of the university, either before or following the freshman medical year.

(*b*) Two years of clinical work largely in hospitals and dispensaries, with thorough courses in internal medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene and medical jurisprudence.

(*c*) As soon as conditions warrant, a fifth undergraduate year should be required which should be spent by the student as an intern in an approved hospital.

10. The college should provide at least six expert, thoroughly trained professors in the laboratory branches, salaried so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be the training of medical students. It is advised that four of these professors be placed in charge of the departments of (*a*) anatomy, (*b*) physiology, (*c*) pathology and bacteriology and (*d*) physiologic chemistry and pharmacology. The other two may be assigned one to the laboratory course in histology and embryology under the department of anatomy and the other to the department of pathology and bacteriology, possibly to the course in laboratory clinical diagnosis. There should also be a sufficient number of assistants in each department to look after the less important details. For colleges having sixty students or less in each class, there should be at least one full-time salaried assistant for each of the four departments mentioned, and at least one additional assistant in each of these departments should be provided for each additional thirty students enrolled. This represents a low average of the full-time assistants already employed by the accepted medical colleges.

11. The faculty should be thoroughly organized and should be made up of graduates of institutions recognized as medical colleges and who have had a training in all departments of medicine. Non-medical men should be selected as teachers in medical schools only under exceptional circumstances and only because medical men of equal special capacity are not available. All faculty members should be appointed because of their ability as teachers and not because they happen to be on the attending staff of a hospital or for other like reasons.

CLINICAL FACILITIES

12. The college should own or entirely control a hospital in order that students may come into close and extended contact with patients under the supervision of the attending staff. This hospital should be in close proximity to the college and have a daily average (for senior classes of 100 students *or less*) of not less than 200 patients who can be utilized for clinical teaching, these patients to be of such character as to permit the student to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties. In the use of this material it is suggested that bed-side and ward clinics be developed for sections of from five to ten junior students, and that a certain number of patients in medicine, surgery and the specialties be assigned to each senior student. The treatment and care of these patients should be particularly observed and recorded by the student under the strict supervision of the intern, or the attending staff of the hospital.[6]

13. The college should also have ample hospital facilities for children's diseases, contagious diseases and nervous and mental diseases.

14. At least six maternity cases should be provided for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

15. Facilities should be provided for at least thirty necropsies during each college session which are attended and can be participated in by senior students (for senior classes of 100 students *or less*).

16. The college should own or control a dispensary, or outpatient department, the attendance to be a daily average of sixty cases (for senior classes of 100 students *or less*), the patients to be carefully classified, good histories and records of the patients to be kept and the material to be well used. The attending staff should be made up of good teachers, should be well organized and be regular in attendance.

OTHER TEACHING FACILITIES

17. The college should have a working medical library to include the more modern text and reference books with the *Index Medicus* and thirty or more leading medical periodicals; the library room should be properly lighted and heated, and easily accessible to students during all or the greater part of the day; it should be equipped with suitable tables and chairs, and have a librarian in charge.

18. A working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from post mortems there also be kept the record of the post mortem, the clinical history of the patient on whom the necropsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen.

19. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver; to provide cross-sections and other demonstration material and to allow of a thorough course for each senior in operative surgery on the cadaver.

20. For modern experimental laboratory work in physiology, pharmacology and bacteriology as well as for a reasonable amount of medical research, a supply of animals—frogs, turtles, rabbits and guinea-pigs, if not also cats and dogs—is essential. Proper provision, also, is necessary for the housing and care of such animals. In any use made of animals great care should be used to prevent needless suffering and work by students should be carefully supervised.

21. A supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, a Roentgen-ray and other apparatus now so generally used in medical teaching.

22. The college should show evidences of thorough organization and of reasonably modern methods in all departments and evidences that the equipment and facilities are *being intelligently used* in the training of medical students.

23. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and latest graduating class in regular annual catalogues or announcements.

NOTE.—Correspondence from medical colleges regarding any of the above requirements is invited, and any further suggestions or information available will be gladly furnished.

Definitions of a Medical College* and a Medical School†

"An institution to be ranked as a medical college must have at least six professors giving their entire time to medical work, a graded course of four full years of college grade in medicine, and must require for admission not less than the usual four years of academic or high-school preparation, or its equivalent, in addition to the preacademic or grammar-school studies."

By a medical school as differentiated from a medical college is meant a part of a university requiring for admission *two years* of collegiate work, or its equivalent, and offering instruction of not less than two years' duration, leading to the degree of Doctor of Medicine.

6. Suggestions more in detail may be found in the "Report of the Committee on the Reorganization of Clinical Teaching," THE JOURNAL A. M. A., March 6, 1915.

* This definition is based on the definition of a "college" given in the revised ordinances of the state of New York. It has been adopted also by the Carnegie Foundation for the Advancement of Teaching.

† Based on the definition of the term "school" adopted in 1909 by the Association of American Universities.

Grading of Medical Colleges

As in the previous classification, all medical colleges were rated by the Council on Medical Education on a civil service basis on a scale of 1,000 points. The data relating to each college were grouped under ten general heads in such manner that the groups would have as nearly equal weight as possible, each group allowing a possible 100 points (10 per cent.) out of a possible 1,000 points (100 per cent.). The ten heads under which the data were arranged are as follows:

1. Showing of graduates before state boards and other evidences of the training received.
2. Enforcement of a satisfactory preliminary educational requirement, granting of advanced standing and the character of the records.
3. Character of curriculum, grading of course, length of session, time allowed for matriculation and supervision.
4. Medical school buildings; light, heat, ventilation, cleanliness.
5. Laboratory facilities and instruction.
6. Dispensary facilities and instruction.
7. Hospital facilities and instruction, maternity work, autopsies, specialties.
8. Faculty, number and qualifications of trained teachers, full-time instructors, and assistants, especially of the laboratory branches, organization, and extent of research work.
9. Extent to which the school is conducted for properly teaching the science of medicine rather than for the profit of the faculty directly or indirectly.
10. Possession and use made of libraries, museums, charts, stereopticons, etc.

Class A colleges are those which are acceptable; Class B, those which, under their present organization, might be made acceptable by general improvements, and Class C, those which require a complete reorganization to make them acceptable.

THIRD CLASSIFICATION OF MEDICAL COLLEGES

Revised to Aug. 1, 1915

CLASS A—ACCEPTABLE MEDICAL COLLEGES

ALABAMA

University of Alabama, School of Medicine.....Mobile

CALIFORNIA

Leland Stanford Junior Univ., School of Med..San Francisco
University of California Medical School.....San Francisco

COLORADO

University of Colorado, School of Med.....Boulder-Denver

CONNECTICUT

Yale University, School of Medicine.....New Haven

DISTRICT OF COLUMBIA

Georgetown University, School of Medicine.....Washington
George Washington University Medical School..Washington
Howard University, School of Medicine.....Washington

GEORGIA

Atlanta Medical College.....Atlanta
University of Georgia, Medical Department.....Augusta

ILLINOIS

Northwestern University Medical School.....Chicago
Rush Medical College (University of Chicago).....Chicago
University of Illinois, College of Medicine.....Chicago

INDIANA

Indiana Univ., School of Med.....Bloomington-Indianapolis

IOWA

State University of Iowa, College of Medicine...Iowa City
State Univ. of Iowa, Coll. of Homeopathic Med...Iowa City

KANSAS

University of Kansas, School of Med.....Lawrence-Rosedale

KENTUCKY

University of Louisville, Medical Department.....Louisville

LOUISIANA

Tulane Univ. of Louisiana, School of Med....New Orelans

MAINE

Bowdoin Medical School.....Brunswick-Portland

MARYLAND

Johns Hopkins University, Medical Department...Baltimore
University of Maryland, School of Medicine and
the College of Physicians and Surgeons'.....Baltimore

MASSACHUSETTS

Boston University, School of Medicine.....Boston
Medical School of Harvard University.....Boston
Tufts College Medical School.....Boston

MICHIGAN

Detroit College of Medicine and Surgery.....Detroit
University of Michigan Medical School.....Ann Arbor
University of Mich., Homeopathic Med. School..Ann Arbor

MINNESOTA

University of Minnesota Medical School.....Minneapolis

MISSISSIPPI

University of Mississippi, Dept. of Medicine*.....Oxford

MISSOURI

St. Louis University, School of Medicine.....St. Louis
University of Missouri, School of Medicine*.....Columbia
Washington University Medical School.....St. Louis

NEBRASKA

University of Nebraska, College of Medicine.....Omaha

NEW HAMPSHIRE

Dartmouth Medical School*.....Hanover

NEW YORK

Albany Medical College.....Albany
Columbia Univ., Coll. of Phys. and Surgs...New York City
Cornell University Medical College.....New York City
Fordham University, School of Medicine...New York City
Long Island College Hospital.....Brooklyn
Syracuse University, College of Medicine.....Syracuse
University and Bellevue Hospital Med. Coll..New York City
University of Buffalo, Department of Medicine.....Buffalo

NORTH CAROLINA

University of North Carolina, School of Med.*..Chapel Hill
Wake Forest College, School of Medicine*....Wake Forest

NORTH DAKOTA

University of North Dakota, School of Medicine*..University

OHIO

Ohio State University, College of Medicine.....Columbus
University of Cincinnati, College of Medicine.....Cincinnati
Western Reserve University, School of Medicine..Cleveland

OREGON

University of Oregon, Department of Medicine.....Portland

PENNSYLVANIA

Hahnemann Medical College and Hospital.....Philadelphia
Jefferson Medical College of Philadelphia.....Philadelphia
Medico-Chirurgical College of Philadelphia....Philadelphia
University of Pennsylvania, School of Med....Philadelphia
University of Pittsburgh, School of Medicine....Pittsburgh
Woman's Medical College of Pennsylvania.....Philadelphia

SOUTH DAKOTA

University of South Dakota, College of Medicine*..Vermilion

TENNESSEE

Vanderbilt University, Medical Department.....Nashville
University of Tennessee, College of Medicine.....Memphis

TEXAS

University of Texas, Department of Medicine.....Galveston

UTAH

University of Utah, School of Medicine*.....Salt Lake City

VERMONT

University of Vermont, College of Medicine.....Burlington

VIRGINIA

Medical College of Virginia.....Richmond
University of Virginia, Department of Med...Charlottesville

WISCONSIN

Marquette University, School of Medicine.....Milwaukee
University of Wisconsin Medical School*.....Madison

Total, 66.

* These colleges give only the first two years of the medical course.

1. In 1915 the University of Maryland School of Medicine and the College of Physicians and Surgeons of Baltimore were merged into one institution but retain the double title.

CLASS B—COLLEGES NEEDING GENERAL IMPROVEMENTS TO BE MADE ACCEPTABLE

ARKANSAS

University of Arkansas, Medical Department....Little Rock

CALIFORNIA

College of Physicians and Surgeons.....Los Angeles
Oakland College of Medicine and Surgery.....Oakland

ILLINOIS

Bennett Medical College.....Chicago
Chicago College of Medicine and Surgery.....Chicago
Hahnemann Medical College and Hospital.....Chicago

NEBRASKA

John A. Creighton Medical College.....Omaha

NEW YORK

New York Homeopathic Medical College and Flower Hospital.....New York City

NORTH CAROLINA

Leonard Medical School*.....Raleigh

OHIO

Eclectic Medical College.....Cincinnati

OKLAHOMA

Univ. of Oklahoma, School of Med..Norman-Oklahoma City

PENNSYLVANIA

Temple University, Department of Medicine...Philadelphia

SOUTH CAROLINA

Medical College of the State of South Carolina..Charleston

TENNESSEE

Meharry Medical College.....Nashville

TEXAS

Baylor University, College of Medicine.....Dallas
Fort Worth School of Medicine.....Fort Worth

WEST VIRGINIA

West Virginia University, School of Med.*....Morgantown

Total, 17.

CLASS C—COLLEGES REQUIRING A COMPLETE REORGANIZATION TO MAKE THEM ACCEPTABLE

CALIFORNIA

College of Medical Evangelists....Loma Linda-Los Angeles
College of Physicians and Surgeons.....San Francisco

GEORGIA

Georgia College of Eclectic Medicine and Surgery[2]..Atlanta

ILLINOIS

Chicago Hospital College of Medicine.....Chicago
Jenner Medical College.....Chicago

MASSACHUSETTS

College of Physicians and Surgeons[3].....Boston

MISSOURI

Eclectic Medical University[4].....Kansas City
National Univ. of Arts and Sciences, Med. Dept.[5]....St. Louis

NEBRASKA

Lincoln Medical College[6].....Lincoln

NEW YORK

New York Med. Coll. and Hosp. for Women..New York City

OHIO

Ohio State Univ., Coll. of Homeopathic Med.....Columbus

TENNESSEE

University of West Tenn. Coll. of Med. and Surg..Memphis

Total, 12.

2. Reported not recognized by the Georgia State Board of Medical Examiners.
3. Reported not recognized by the Massachusetts Medical Society.
4. Reported not recognized by the Missouri State Board of Health.
5. Formerly known as the American Medical College.
6. Formerly known as the Cotner University Medical College.

Colleges Not Recognized

Official statement from the following thirty-four state licensing boards indicate that as a a rule the colleges rated in Class C are not recognized:

Alabama	Maryland (Reg.)	Oklahoma
Arkansas (Reg.)	Michigan	Pennsylvania
Colorado	Minnesota	Porto Rico
Connecticut (Reg.)	Mississippi	Rhode Island
Deleware	New Hampshire	South Carolina
Florida (Reg.)	New Jersey	South Dakota
Georgia	New Mexico	Texas
Indiana	New York	Vermont
Iowa	North Carolina	Virginia
Kentucky	North Dakota	West Virginia
Louisiana (Reg.)	Ohio	Wisconsin
Maine		

Of the above states the boards of New Hampshire, Rhode Island and Virginia recognize only the medical colleges listed in Class A.

State Requirements of Higher Preliminary Education

There are now twenty-eight states which have adopted requirements of preliminary education in addition to a standard four-year high school education. These states, the number of college years required and the time the higher requirement becomes effective are as follows:

State Examining Board of	Number of Years Required	Affects Students Matriculating	Affects All Applicants
Requiring Two Years:			
Alabama	2	1915-16	1919
Colorado	2	1910-11	1914
Indiana	2	1911-12	1915
Iowa	2	1911-12	1915
Minnesota	2	1908-09	1912
New Hampshire	2	1915-16	1919
New Jersey	2	1917-18	1921
North Dakota	2	1908-09	1912
South Dakota	2	1911-12	1915
Wisconsin	2	1915-16	1919
Requiring One Year:			
Arkansas	1	1915-16	1919
California	1	1915-16	1919
Connecticut	1	1910-11	1914
Illinois	1	1915-16	1919
Kansas	1	1910-11	1914
Kentucky	1	1914-15	1918
Louisiana	1	1915-16	1919
Maryland	1	1914-15	1918
Michigan	1	1914-15	1918
Mississippi	1	1915-16	1919
Oklahoma	1	1914-15	1918
Pennsylvania	1	1914-15	1918
Rhode Island	1	1914-15	1918
Texas	1	1914-15	1918
Utah	1	1913-14	1917
Vermont	1	1913-14	1917
Virginia	1	1914-15	1918
Washington	1	1914-15	1918

Colleges Having Higher Entrance Requirements

The thirty-nine medical schools which are now requiring, as a minimum for entrance *two years* or more of work in a college of liberal arts in addition to a four-year high-school education are as follows:

	In Force
ALABAMA	
University of Alabama, School of Medicine	1915
CALIFORNIA	
College of Medical Evangelists	1915
Leland Stanford Junior University, School of Medicine	1909
University of California Medical School	1905
COLORADO	
University of Colorado, School of Medicine	1910
CONNECTICUT	
Yale University, School of Medicine	1909
DISTRICT OF COLUMBIA	
Georgetown University, School of Medicine	1912
Howard University, School of Medicine	1914
ILLINOIS	
Northwestern University Medical School	1911
Rush Medical College (University of Chicago)	1904
University of Illinois, College of Medicine	1914
INDIANA	
Indiana University, School of Medicine	1910
IOWA	
State University of Iowa, College of Medicine	1910
State University of Iowa, College of Homeopathic Medicine	1910

KANSAS
University of Kansas, School of Medicine..... 1909

MARYLAND
Johns Hopkins University, Medical Department..... 1893

MASSACHUSETTS
Medical School of Harvard University..... 1900

MICHIGAN
University of Michigan Medical School..... 1909

MINNESOTA
University of Minnesota Medical School..... 1907

MISSOURI
University of Missouri, School of Medicine..... 1910
Washington University Medical School..... 1912

NEBRASKA
University of Nebraska, College of Medicine..... 1909

NEW HAMPSHIRE
Dartmouth Medical School..... 1910

NEW YORK
Columbia University, College of Physicians and Surgeons..... 1910
Cornell University Medical College..... 1908
Syracuse University, College of Medicine..... 1910

NORTH CAROLINA
Leonard Medical School..... 1914
Wake Forest College, School of Medicine..... 1908

NORTH DAKOTA
University of North Dakota, School of Medicine..... 1907

OHIO
Ohio State University, College of Medicine..... 1915
Western Reserve University, School of Medicine..... 1901

PENNSYLVANIA
University of Pennsylvania, School of Medicine..... 1910
University of Pittsburgh, School of Medicine..... 1913
Woman's Medical College of Pennsylvania..... 1915

SOUTH DAKOTA
University of South Dakota, College of Medicine..... 1909

UTAH
University of Utah, School of Medicine..... 1910

VIRGINIA
Medical College of Virginia..... 1915

WISCONSIN
Marquette University, School of Medicine..... 1915
University of Wisconsin Medical School..... 1907

The forty-four medical colleges which are now requiring, or have announced that they will hereafter require, as a minimum for entrance one year of collegiate work in addition to a four-year high school course, the requirement beginning in the year given:

	In Force
ARKANSAS	
University of Arkansas, Medical Department	1915
CALIFORNIA	
College of Physicians and Surgeons, Los Angeles	1914
DISTRICT OF COLUMBIA	
George Washington University Medical School	1914
GEORGIA	
Atlanta Medical College	1914
University of Georgia, Medical Department	1914
ILLINOIS	
Bennett Medical College	1915
Chicago College of Medicine and Surgery	1915
Hahnemann Medical College and Hospital of Chicago	1914
KENTUCKY	
University of Louisville, Medical Department	1914
LOUISIANA	
Tulane University of Louisiana, School of Medicine	1910
MAINE	
Bowdoin Medical School	1912
MARYLAND	
College of Physicians and Surgeons of Baltimore	1914
University of Maryland, School of Medicine	1914
MASSACHUSETTS	
Boston University, School of Medicine	1914
Tufts College Medical School	1914
MICHIGAN	
Detroit College of Medicine and Surgery	1914
University of Michigan, Homeopathic Medical School	1912
MISSISSIPPI	
University of Mississippi, Department of Medicine	1914
MISSOURI	
National Univ. of Arts and Sciences, Med. Dept.	1914
St. Louis University, School of Medicine	1910
NEBRASKA	
John A. Creighton Medical College	1914
NEW YORK	
Albany Medical College	1914
Fordham University, School of Medicine	1911
Long Island College Hospital	1914
University and Bellevue Hospital Medical College	1912
University of Buffalo, Department of Medicine	1914
NORTH CAROLINA	
University of North Carolina, School of Medicine	1910
OHIO	
Eclectic Medical College	1915
University of Cincinnati, College of Medicine	1913
OKLAHOMA	
University of Oklahoma, School of Medicine	1914
OREGON	
University of Oregon, Department of Medicine	1910
PENNSYLVANIA	
Hahnemann Medical College and Hospital of Philadelphia	1914
Jefferson Medical College of Philadelphia	1914
Medico-Chirurgical College of Philadelphia	1914
Temple University, Department of Medicine	1914
SOUTH CAROLINA	
Medical College of the State of South Carolina	1914
TENNESSEE	
Vanderbilt University, Medical Department	1914
University of Tennessee, College of Medicine	1914
University of West Tennessee, College of Medicine and Surgery	1914
TEXAS	
University of Texas, Department of Medicine	1910
Baylor University, College of Medicine	1913
VERMONT	
University of Vermont, College of Medicine	1912
VIRGINIA	
University of Virginia, Department of Medicine	1910
WEST VIRGINIA	
West Virginia University, School of Medicine	1911

The seven following medical colleges shown in the above list as now requiring one year of collegiate work for admission have announced that all students admitted in the session given and thereafter will be required to have completed *two years* of collegiate work:

	Session of
College of Physicians and Surgeons, Los Angeles	1916-17
Bowdoin Medical College (Maine)	1916-17
Boston University, School of Medicine	1916-17
University of North Carolina, School of Medicine	1917-18
Medical College of the State of South Carolina	1916-17
University of Virginia, Department of Medicine	1917-18
West Virginia University, School of Medicine	1917-18

Hospital Intern Year

Six medical colleges have adopted the requirement of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the sessions when the requirement became effective are as follows:

	Session of
University of Minnesota Medical School	1910-11
Leland Stanford Jr. University, School of Medicine	1914-15
Rush Medical College (University of Chicago)	1914-15
University of California Medical School	1914-15
Northwestern University Medical School	1915-16
University of Vermont, College of Medicine	1915-16

Two state licensing boards, those of Pennsylvania and New Jersey, now require that every candidate to be eligible for license to practice medicine in those states must have served at least one year as an intern in an approved hospital. The requirement became effective in Pnnsylvania in 1914, and will bcome effective in New Jersey in 1916.

Graduate Courses in Public Health

Graduate courses in public health have been established in connection with seven medical schools leading to a degree of Doctor of Public Health[1] (Dr.P.H.), Certified Sanitarian (C.S.), Master of Science in Public Health (M.S.(P.H.)) or Master of Public Health (M.P.H.). The course is for one year except at the universities of Colorado, Michigan, Minnesota and Wisconsin where the course for the Doctorate covers two years. Wisconsin gives a Diploma in Public Health (D.P.H.) for a one-year course. The University of California grants a degree of Graduate in Public Health (Gr.P.H.). These colleges are as follows:

1. Or hygiene (University of Pennsylvania).

MEDICAL COLLEGES GIVING COURSES IN PUBLIC HEALTH

Names of Colleges	Course Started in—	Degree Granted	Years in Course	Degrees Required for Entrance
Univ. of Penn. School of Med.	1909	(Dr. P. H.	1	M.D.
		(C. S.	1	A.B. or B.S.
Med. School of Harvard Univ.	1910	Dr. P. H.	1	A.B., B.S., or M.D.
Univ. of Mich. Med. School...	1912	(M. S. (P. H.)	1	(A.B. or B.S.,
		(Dr. P. H.	2	(and M.D.
Univ. of Wis. Med. School....	1912	(D. P. H.	1	M.D.
		(Dr. P. H.	½	M.D.
Univ. of Colo. School of Med.[2]	1913	(M. S. (P. H.)	1	(A.B., B.S., or
		(Dr. P. H.	2	(M.D.
Detroit Coll. of Med. and Surg.	1913	M. P. H.	1	M.D.
Univ. & Bell. Hosp. Med. Coll.	1914	Dr. P. H.	1	M.D.
Tulane Univ. School of Med...	1914	Dr. P. H.	1	M.D.
Univ. of Minn. Med. School...	1914	Dr. P. H.	½	M.D.
Univ. of Calif. Med. School[3]...	1915	Gr. P. H.	1	M.D.

2. The University of Colorado offers a course of one year leading to the degree of master of science in sanitary engineering to those holding the degree of B.S. in engineering.

3. The University of California offers three courses leading to the degree of graduate in public health. A four-year course beginning with the junior collegiate year; a two-year course for graduates in sanitary engineering; and a course of one and a half years for graduates in medicine.

Special courses in hygiene and preventive medicine are being developed in several other medical schools.

State University Medical Schools

Twenty-nine states now have medical schools as integral parts of the state universities or—in one instance—under state control as separate institutions. These states and other interesting data regarding the medical schools are as follows:

STATE UNIVERSITY MEDICAL SCHOOLS

Medical School of State University of	Only School in State	Length of Med. Course in Years	Years of College Work for Admission	Medical School of State University of	Only School in State	Length of Med. Course in Years	Years of College Work for Admission
Alabama	Yes	4	2†	North Carolina	.....	½	1
Arkansas	Yes	4	1	North Dakota	Yes	½	2†
California	.....	5	2†	Ohio*	.....	4	2
Colorado	Yes	4	2†	Oklahoma	.....	4	1
Georgia	.....	4	1	Oregon	Yes	4	1
Illinois	.....	4	½	South Carolina	Yes	4	1
Indiana	Yes	4	2†	South Dakota	Yes	2	2†
Iowa*	Yes	4	2†	Tennessee	.....	4	1
Kansas	Yes	4	2	Texas	.....	4	1
Maryland	.....	4	1	Utah	Yes	½	2
Michigan*	.....	4	2	Vermont	Yes	5	1
Minnesota	Yes	3	2†	Virginia	.....	4	1
Mississippi	Yes	2	1	West Virginia	Yes	2	1
Missouri	.....	½	½	Wisconsin	.....	½	2†
Nebraska	.....	4	2				

* Have homeopathic departments.
† Similar requirements by licensing board.

In sixteen states no other medical schools exist, medical education in the state being entirely in charge of the state university.

An act of the Maryland ligislature in 1914 created a Maryland State University and provided $15,000 per year for 1915 and 1916, to be used for medical education in the state. The merger recently made between the University of Maryland, School of Medicine and the College of Physicians and Surgeons of Baltimore, it is expected, will result in a close affiliation, at least, with the new Maryland State University.

Of the twenty-nine state medical schools, twenty-one give the complete medical course and grant M.D. degrees while eight give only the first two years of the medical course. California, Minnesota and Vermont require a five-year course, the fifth year to be spent by the student in a hospital as an intern, or in other recognized clinical work. The universities of Iowa, Michigan and Ohio have homeopathic departments. In Iowa the entrance requirements are the same for the two departments, but in Michigan and Ohio, while for the regular department two years of collegiate work are required for entrance, only one year is required for the homeopathic college.

As may be noted, sixteen of these state university medical schools are now requiring for admission two years of collegiate work. As already shown the state schools are supported in this requirement by the state licensing boards in Alabama, Colorado, Indiana, Iowa, Minnesota, North Dakota, South Dakota and Wisconsin. The thirteen remaining state university medical schools now require for admission a standard four-year high school course and in addition one year of collegiate work.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are as follows:

SECTION 1.—Every college holding membership in this Association shall, on and after Jan. 1, 1914, require for matriculation a completed or unconditioned medical student's certificate, to be granted by a state medical examining and licensing board, or a board empowered by statute to grant such certificates, or a certificate of entrance to the academic department of a state university, or a certificate of entrance to an accredited university or college, providing that said certificate is granted on no less than the following requirements:

(a) A diploma and transcript of record from a fully accredited high school, normal school or academy requiring for admission evidence of the completion of a standard course in primary and intermediate grades, and for graduation, the completion of a standard four-year high school course, embracing two years (2 units) of mathematics, two years (2 units) of English, two years (2 units) of one foreign language, one year (1 unit) of American history and civics, and seven years (7 units) of further credit in language, literature, history or science, making the total of units at least fourteen; and in addition, one year each of physics, chemistry, biology and French or German of college grade of each not less than eight semester hours.

(b) For the high school requirement an examination in the following branches totaling 14 units:

(A) Required, 7 units.	Units
Mathematics (minimum 2 years, maximum 3 years), algebra and plane geometry	2
English (minimum 2 years, maximum 4 years)	2
One foreign language (minimum 2 years, maximum 4 years	2
History, American and civics	1
Total number of required units	7

(B) Elective, 7 units. To be selected from the following:	Units
English language and literature (in addition to the required work)	1 to 2
Foreign languages, additional, Latin, German, Italian, French, Spanish or Greek (not less than 1 year in any one)	1 to 4
Advanced mathematics, advanced algebra, solid geometry and trigonometry (½ year each)	1
Natural science, chemistry 1 year, physics 1 year, and biology, botany, physiology and zoology (½ to 1 year each)	½ to 2
Earth science, physical geography, geology and mineralogy (½ year to 1 year each)	½ to 1
Astronomy (½ year)	½
Drawing (½ to 1 year)	½ to 1
History, ancient, medieval and modern, and English (1 year each)	1 to 3
Economics (½ year)	½
Manual training (1 year)	1
Book keeping (½ to 1 year)	½ to 1

One unit in any subject is the equivalent of work in that subject for four or five periods per week for a year of at least thirty-six weeks, periods to be not less than forty-five minutes in length. One unit is equivalent to 2 semester credits or 2 points.

THE PRELIMINARY COLLEGE YEAR

(The requirements of the preliminary college year are the same as set forth in the standard of the Council on Medical Education on page 700. The standard was adopted April, 1915, by a joint committee representing the two organizations.)

SEC. 2.—The examination of credentials must be conducted by and under the authority of the board of medical examiners of the state in which the college is located, or by a duly authorized examiner of the college entrance examination board, or the authorized examiner of an accredited university, state or otherwise, or by an examiner whose certificates are accepted by accredited colleges or universities, or by a method approved by the judicial council of this association.

SEC. 3.—The term "accredited" as applied to high schools, academies, colleges and universities means institutions of that type that have been investigated and are accredited by the state university of their respective states, by the North Central Association of Colleges and Secondary Schools, the Association of Colleges and Preparatory Schools of the Southern States, the Association of Colleges and Preparatory Schools of the Middle States and Maryland, the New England College Entrance Certificate Board, the Association of American Universities and the Association of State Universities, provided that such accrediting is based on Article III, Section 1, of this constitution.

SEC. 4.—Colleges in membership in this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, excepting for the fourth year of the course, but no member of this Association shall admit a student to advanced standard without receiving from the dean, secretary or registrar of such college a direct written communication certifying to the applicant's standing. Credit

for time or scholarship cannot be given beyond that of the college issuing the credentials, except by mutual agreement between the colleges.

SEC. 5.—Candidates for the degree of Doctor of Medicine shall have attended four courses of study in four calendar years, each annual course to have been of not less than thirty-two teaching weeks' duration, and at least ten months shall intervene between the beginning of any course and the beginning of the preceding course.

SEC. 6.—No time credit shall be given to holders of a Bachelor's degree, but subject credit may be given on satisfactory examination. Four years of residence in a medical college shall be required of all candidates for the degree of Doctor of Medicine.

SEC. 7.—A college which gives less than a four years' course of study, but does not graduate students, and is possessed of other required qualifications, may be admitted to membership.

SEC. 8.—Each student shall be obliged to attend not less than 80 per cents. of the exercises in every annual course of study for which he seeks credit. No student shall be given credit on examination unless he attains a grade of at least 70 per cent. or its equivalent in any other marking system. And no student shall be graduated unless he shall have attained a passing grade in each and all subjects of the required curriculum.

CURRICULUM

SECTION 1.—The entire course of four years shall consist of at least 4,000 hours for each student, and shall be grouped in divisions and subdivided into subjects; each division and subject to be allotted the number of hours as shown in the following schedule:

DIVISION 1.—ANATOMY, 720 HOURS (18 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Gross anatomy (including applied anatomy)	510	120	390
(b) Histologic and miscroscopic anatomy	135	30	105
(c) Embryology	75	30	45

DIVISION 2.—PHYSIOLOGY AND CHEMISTRY, 600 HOURS (15 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Inorganic chemistry	180	60	120
(b) Organic chemistry	75	30	45
(c) Physiologic chemistry	104	30	75
(d) Physiology	240	140	100

DIVISION 3.—PATHOLOGY, BACTERIOLOGY AND HYGIENE, 450 HOURS (11.25 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Bacteriology	135	30	105
(b) Hygiene and general dietetics	45	45	...
(c) Pathology	270	60	210

DIVISION 4.—PHARMACOLOGY, MATERIA MEDICA AND THERAPEUTICS, 240 HOURS (6 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Pharmacology	105	40	65
(b) Materia medica and pharmacology	80	...	...
(c) Therapeutics	55	...	...

DIVISION 5.—MEDICINE AND MEDICAL SPECIALTIES, 970 HOURS (24.25 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) General medicine (including clinical microscopy)	640	...	...
(b) Pediatrics	150	...	...
(c) Nervous and mental diseases	105	...	...
(d) Jurisprudence, ethics and economics	30	...	...
(e) Dermatology and syphilis	45	...	...

DIVISION 6.—SURGERY AND SURGICAL SPECIALTIES, 720 HOURS (18 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) General surgery	510	...	..
(b) Orthopedic surgery	45	...	...
(c) Genito-urinary diseases	45	...	...
(d) Eye	60	...	...
(e) Ear, nose and throat	60	...	..

DIVISION 7.—OBSTETRICS AND GYNECOLOGY, 300 HOURS (7.5 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Obstetrics	195	...	...
(b) Gynecology (including some abdominal surgery)	105	...	...

Colleges may reduce the number of hours in any subject not more than 20 per cent. provided that the total number of hours in a division is not reduced. Where the teaching conditions in a college are best subserved, the subject may be, for teaching purposes, transferred from one division to another. When didactic and laboratory hours are specified in any subject, laboratory hours may be substituted for didactic hours.

SEC. 2.—Each medical college in membership in the Association shall print in every annual catalogue or announcement a table of the total number of hours work given in said college, arranged both by subjects and years.

SEC. 3.—Each college in membership in this Association shall print annually a list of its students by classes.

MEMBERS OF ASSOCIATION

University of Alabama, School of Medicine.
Leland Stanford Junior University, School of Medicine.
University of California Medical School.
University of Southern California, Medical Department.
University of Colorado, School of Medicine.
Yale University, School of Medicine.
Georgetown University, School of Medicine.
George Washington University Medical School.
Howard University, School of Medicine.
University of Georgia, Medical Department.
Northwestern University Medical School.
Rush Medical College.
University of Illinois, College of Medicine.
Indiana University, School of Medicine.
State University of Iowa, College of Medicine.
University of Kansas, School of Medicine.
University of Louisville, Medical Department.
Tulane University of Louisiana, School of Medicine.
College of Physicians and Surgeons, Baltimore.
Johns Hopkins University, Medical Department.
University of Maryland, School of Medicine.
Medical School of Harvard University.
Tufts College Medical School.
Detroit College of Medicine and Surgery.
University of Michigan Medical School.
University of Minnesota Medical School.
University of Mississippi, Department of Medicine.
St. Louis University, School of Medicine.
University of Missouri, School of Medicine.
Washington University Medical School.
John A. Creighton Medical College.
University of Nebraska, College of Medicine.
Columbia University, College of Physicians and Surgeons.
Cornell University Medical College.
Syracuse University, College of Medicine.
University and Bellevue Hospital Medical College.
University of Buffalo, Medical Department.
University of North Carolina, School of Medicine.
Wake Forest College, School of Medicine.
University of North Dakota, School of Medicine.
University of Cincinnati, College of Medicine.
Ohio State University, College of Medicine.
Western Reserve University, School of Medicine.
University of Oklahoma, School of Medicine.
Hahnemann Medical College and Hospital of Philadelphia.
University of Pennsylvania, School of Medicine.
University of Pittsburgh, School of Medicine.
University of the Philippines College of Medicine and Surgery.
Meharry Medical College (Affiliated Member).
University of Tennessee, College of Medicine.
Vanderbilt University, Department of Medicine.
University of Texas, Department of Medicine.
University of Utah, School of Medicine.
University of Vermont, College of Medicine.
Medical College of Virginia.
University of Wisconsin Medical School.

The secretary-treasurer of the Association is Dr. Fred. C. Zapffe, 3431 Lexington Street, Chicago.

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, several of which do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination, regardless as to whether the college is sectarian or not. In a few instances in which such reports were not received the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1914. Extracts of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's estimate for 1914. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of collegiate work. Two states, New Jersey and Pennsylvania, require a year's hospital internship before a license will be granted.

ALABAMA

Alabama, population 2,269,945, has one medical college, the School of Medicine of the University of Alabama, located in Mobile, a city with a population of 55,573.

In order to secure licenses to practice medicine in Alabama, students matriculating in the session of 1915-16 and thereafter, must have completed *two years* of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine.

Mobile

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, St. Anthony and Lawrence Streets.—Organized in 1859 as the Medical College of Alabama. Classes were graduated in 1861 and in all subsequent years except 1862 to 1868, inclusive. It was reorganized as the Medical Department of the University of Alabama in 1897. All property was transferred to the

University of Alabama in 1907, when the present title was assumed. Two years of college work are required for admission. The faculty consists of 17 professors and 36 lecturers and assistants, a total of 53. The course of study covers four years of thirty-two weeks each. The total fees for each of the four years, respectively, are $165, $160, $160 and $185. The Acting Dean is Dr. Thomas H. Frazer. The total registration for 1914-15 was 65; graduates, 13. The fiftieth session begins Sept. 13, 1915, and ends June 7, 1916.

ARKANSAS

Arkansas, population 1,686,480, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 53,811.

To secure licenses to practice medicine in Arkansas, student matriculating in the session of 1915-16 and thereafter must have completed at least one year of collegiate work including college courses in physics, chemistry, biology and a modern language before beginning the study of medicine. This applies to all graduates of 1919 and thereafter.

Little Rock

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT, Markham and Center Streets.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899, when the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class graduated in 1880. The faculty consists of 19 professors and 28 lecturers and assistants, total 57. Entrance requirements are a year of collegiate work beyond a four-year high school course. The course of study covers four years of thirty-two weeks each. The fees are $125 for each of the first three years and $150 for the fourth year. The Dean is Dr. Morgan Smith. Total registration 1914-15 was 277; graduates, 19. The thirty-seventh session begins Sept. 13, 1915, and ends May 12, 1916.

CALIFORNIA

California, population 2,757,895, has six medical colleges. Three are located in San Francisco, a city of 448,502 inhabitants. They are Leland Stanford Junior University School of Medicine, College of Medicine of the University of California and the College of Physicians and Surgeons. The College of Physicians and Surgeons, Medical Department of the University of Southern California is situated in Los Angeles, population 438,914. The Oakland College of Medicine and Surgery is in Oakland, population 183,002. The College of Medical Evangelists is located at Loma Linda, a village of 110 people.

To secure licenses to practice medicine in California under the "physician's and surgeon's" certificate, students matriculating in medical colleges in and after the session of 1915-16, prior to such matriculation, must have completed at least one year of recognized collegiate work including college courses in physics, chemistry, biology and a modern language. This applies to all graduates of 1919 and thereafter.

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Second and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1865. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment, became a clinical department. This Los Angeles portion was changed to a graduate school in 1914. In 1913 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided for. *Two years* of collegiate work are required for admission. The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco. The faculty is composed of 23 professors and 72 associates and assistants, a total of 95. The course covers five years of nine months each, the fifth year to consist of an internship or of special work in a department of the medical school. The fees are $190, $190, $167 and $167. The Dean is Dr. Herbert C. Moffitt, San Francisco. Total registration for 1914-15 was 133, graduates, 14. The forty-third session begins Aug. 13, 1915, and ends May 17, 1916.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The faculty numbers 11. The first class graduated in 1914. The course extends over four years of nine months each. *Two years* of college work are required for admission. The total fees each year are $136; matriculation fee, $5, payable but once; graduation fee, $10. President is Dr. Newton Evans. The total registration for 1914-15 was 63; graduates, 12. The seventh session begins Sept. 26, 1915, and ends June 15, 1916.

Los Angeles

COLLEGE OF PHYSICIANS AND SURGEONS, MEDICAL DEPARTMENT OF THE UNIVERSITY OF SOUTHERN CALIFORNIA, 516 East Washington Street.—Organized in 1903, first class graduated in 1905; became Medical Department, University of Southern California, Aug. 11, 1909. The course covers four years of nine months each. One year of collegiate work is required for admission. The faculty consists of 23 professors and 57 associate professors, lecturers and instructors, a total of 80. The fees for the four years, respectively, are $185, $182, $160 and $175. The Dean is Dr. Charles W. Bryson. The registration for 1914-15 was 132; graduates, 25. The next session begins Sept. 6, 1915, and ends June 7, 1916.

Oakland

OAKLAND COLLEGE OF MEDICINE AND SURGERY, Thirty-First and Grove Streets.—Organized in 1900, opened in 1902. The first class graduated in 1906. The faculty numbers 44. The course covers four years of nine months each, and the classes are limited to ten students each. The total fees for each of the four years, respectively, are $185, $190, $150 and $150. The Registrar is Dr. Edward N. Ewer. The total registration for 1914-15 was 12; graduates, 4. The fourteenth session begins Aug. 16, 1915, and ends June 1, 1916.

San Francisco

COLLEGE OF PHYSICIANS AND SURGEONS, 344 Fourteenth Street.—Organized in 1896. The first class graduated in 1897. The faculty numbers 30. The course covers four years of nine months each. The fees for each of the four years, respectively, are $165, $160, $160 and $185. The Dean is Dr. L. W. Spriggs. Registration for 1914-15 was 62; graduates, 8. The nineteenth session begins Sept. 6, 1915, and ends June 8, 1916.

San Francisco-Palo Alto

LELAND STANFORD JUNIOR UNIVERSITY, SCHOOL OF MEDICINE, University Campus, Palo Alto, and Sacramento and Webster Streets, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The faculty consists of 42 professors and 54 lecturers, assistants, etc., a total of 96. Three years of collegiate work are required for admission. The course covers five years of nine months each, including a year of practical or intern work. The total fees for the first four years, respectively, are $160, $155, $150 and $150. The Dean is Dr. R. L. Wilbur, San Francisco. The total registration for 1914-15 was 95; graduates, 16. The sixth session begins Sept. 1, 1915, and ends May 22, 1916.

COLORADO

Colorado, with a population of 909,537, has one medical college, the University of Colorado School of Medicine. The first two years of the course are given at Boulder, the seat of the university, while the last two, or clinical years, are given in Denver, which has a population of 245,523.

The Colorado State Board of Medical Examiners will register without further examination graduates of medical colleges in good standing who present licenses issued after examination by any other licensing board. The law permits any one, graduate or non-graduate, to try the Board's written examination. No graduate of 1914 or thereafter is eligible to obtain a license in Colorado, on indorsement of his credentials, unless he graduated from a medical college which, at the time he matriculated, required at least *two years'* study, without conditions, in an accredited college of liberal arts, and this work must have included courses in physics, chemistry, biology and one modern language.

Boulder-Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911, when the legal right to teach the last two or clinical years in Denver was secured. The faculty embraces 53 professors and 30 lecturers and assistants, a total of 83. The work embraces a graded course of four years of nine months each. The entrance requirements are *two years* of college work counting toward a degree in arts in an accredited college or university. The tuition is $75 per year; there are no other fees. The Dean is Dr. William P. Harlow, Boulder. The total registration for 1914-15 was 59; graduates, 8. The thirty-fourth session begins Sept. 13, 1915, and ends June 7, 1916.

CONNECTICUT

Connecticut, with a population of 1,202,688, has one medical college, Yale University, School of Medicine, located in New Haven, population 144,505.

Candidates for license to practice medicine in Connecticut, who graduate in 1914 or thereafter are not eligible unless, prior to entering on the study of medicine they had completed, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology.

New Haven

YALE UNIVERSITY, SCHOOL OF MEDICINE, 150 York Street and Congress Avenue and Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. The faculty consists of 24 professors and 50 lecturers and assistants, a total of 74. The requirement for admission is *two full years* of collegiate work plus evidence of satisfactory preparation in physics, general inorganic chemistry and general biology. In 1916-17 and thereafter, all matriculants must have satisfactorily completed courses in general physics, general inorganic chemistry, general biology, organic chemistry, physical chemistry or laboratory physics, elementary psychology, and must have a reading knowledge of German, all reasonably equivalent to the courses in these subjects in Yale University. The course covers four years of nine months each. The fees for the four years, respectively, are approximately $223, $170, $153 and $163. The Dean is Dr. George Blumer. The total registration for 1914-15 was 49, graduates, 7. The one hundred and third session begins Sept. 30, 1915, and ends June 21, 1916.

DISTRICT OF COLUMBIA

Washington, population 353,378, has three medical colleges; George Washington University Medical School, Georgetown University, School of Medicine and Howard University, School of Medicine.

Washington

GEORGE WASHINGTON UNIVERSITY MEDICAL SCHOOL, 1325 H Street, N.-W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years, except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. The faculty is composed of 34 professors and 52 instructors, demonstrators and assistants, a total of 86. One year of collegiate work is required for admission. The course covers four years of thirty-two weeks each. The total fees for the four years, respectively, are $163, $159, $153 and $153. The Dean is Dr. William C. Borden. The total registration for 1914-15 was 145; graduates, 25. The ninety-fourth session begins Sept. 29, 1915, and ends June 7, 1916.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 920 H Street, N.W.—Organized in 1851. The first class graduated in 1852. The faculty contains 24 professors, 67 instructors and assistants; total, 91. *Two years* of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for the first year are $165, and for each of the other three years, $150. The Dean is Dr. George M. Kober. The registration for 1914-15 was 81; graduates, 31. The sixty-fifth session begins Sept. 24, 1915, and ends June 13, 1916.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W Streets, N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Colored students compose a majority of those in attendance. The faculty comprises 17 professors and 21 lecturers and assistants, 38 in all. The admission requirements are one year of collegiate work including physics, chemistry, botany and zoology and a reading knowledge of one modern language besides English. The course covers four years of thirty-two weeks each. The fees of each of the four sessions, respectively, are $137, $127, $127 and $134. The Dean is Dr. Edward A. Balloch. Registration for 1914-15 was 100; graduates, 20. The forty-eighth session begins Oct. 1, 1915, and ends June 7, 1916.

GEORGIA

Georgia, population 2,776,513, has three medical colleges; University of Georgia, Medical Department, located in Augusta, population 49,451, the Atlanta Medical College and the Georgia College of Eclectic Medicine and Surgery in Atlanta, a city of 179,292 population.

Atlanta

ATLANTA MEDICAL COLLEGE, MEDICAL DEPARTMENT OF EMORY UNIVERSITY, Butler and Armstrong Streets.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and in subsequent years except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming its first title. Became the Medical Department of Emory University in 1915. One year of collegiate work is required for entrance. It has a faculty of 32 professors and 71 instructors, assistants, etc., a total of 103. The course of study is four years of thirty-two weeks each. The fees are $150 each year. The Dean is Dr. W. S. Elkin. Total registration was 341; graduates, 132. The next session begins Sept. 27, 1915, and ends May 31, 1916.

GEORGIA COLLEGE OF ECLECTIC MEDICINE AND SURGERY, Tanner Street near Edgewood Avenue.—Organized in 1877 as the Georgia Eclectic Medical College. In 1884 it acquired the charter of the College of American Medicine and Surgery. Assumed present title in 1886. The first class graduated in 1878. The total registration for 1914-15 was 21; graduates, 7. It is stated that this college will close after the next session when it will have graduated the balance of the students enrolled.

Augusta

UNIVERSITY OF GEORGIA, MEDICAL DEPARTMENT, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the University in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. The faculty includes 20 professors and 30 assistants, 50 in all. One year of collegiate work is required for entrance. The course is four years of thirty-four weeks each. Fees are $150 each year for non-residents of Georgia; for residents the fees for the four years respectively are $55, $50, $55 and $60. The Dean is Dr. W. H. Doughty, Jr. The total registration for 1914-15 was 54; graduates, 12. The eighty-fourth session begins Sept. 15, 1915, and ends May 31, 1916.

ILLINOIS

Illinois, population 5,986,781, has eight medical colleges, two of which give instruction at night, all located in Chicago, a city of 2,393,325 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Hahnemann Medical College and Hospital, Bennett Medical College, Chicago College of Medicine and Surgery, Jenner Medical College and the Chicago Hospital College of Medicine.

To be eligible for license to practice medicine in Illinois, students matriculating in the session of 1915-16 and thereafter, in addition to an accredited four-year high school education, must have completed at least a year of collegiate work including courses in physics, chemistry, biology and a modern language, to be taken either in a preliminary year given by a recognized medical college, or in an approved college of liberal arts.

Chicago

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago. The first class graduated in 1844. The faculty is composed of 108 professors, 193 associates, instructors, etc., a total of 301. The requirements for admission are *two years* of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes and to 120 students in each of the clinical years. No application for admission is accepted after September 1. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshmen and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison Streets. The tuition fees are $180 each year. A matriculation fee of $5 is paid but once, and there are incidentals amounting from $3 to $10 annually. The Dean is Dr. John M. Dodson. Total registration 1914-15 was 487; graduates, 104. The seventy-third session begins Oct. 1, 1915, and ends June 17, 1916.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 2431 South Dearborn Street.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. The faculty comprises 57 professors and 78 lecturers and assistants, a total of 135. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University plus *two years* of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each. The fees for the four years, respectively, are $190, $195, $190 and $206. The Dean is Dr. Arthur R. Edwards. Total registration for 1914-15 was 194; graduates, 36. The fifty-sixth session begins Oct. 5, 1915, and ends June 6, 1916.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, Honore and Congress Streets.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was cancelled in June 1912, but restored in March, 1913, when the present title was assumed. The American Medical Missionary College was absorbed in 1910. *Two years* of collegiate work are required for admission. The faculty is composed of 55 professors, 99 assistants and instructors, a total of 149. The total fees for the four years, respectively, are $155, $160, $150 and $165. The Dean is Dr. D. A. K. Steele. Total registration for 1914-15 was 289; graduates, 102. The thirty-fourth session begins Sept. 30, 1915, and ends June 14, 1916.

CHICAGO COLLEGE OF MEDICINE AND SURGERY, 706 South Lincoln Street.—Organized in 1901 as the American College of Medicine and Surgery (Chicago Eclectic Medical College). The latter part of the name was dropped in 1902 and it became the Medical Department of Valparaiso University. Eclecticism was dropped in 1905. The name was changed to the above in 1907. One year of collegiate work, including courses in physics, chemistry, biology and a modern language is required for admission. The course covers four years of eight months each. The faculty numbers 137. The total fees of each of the four years are $150. The Secretary is Dr. Fred. C. Zapffe. The total registrations was 531; graduates, 125. The fifteenth session begins Oct. 4, 1915, and ends May 27, 1916.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF CHICAGO, 2811 Cottage Grove Avenue.—Organized in 1859. The first class was graduated in 1861. Absorbed the Chicago Homeopathic Medical College in 1904. The faculty includes 58 professors and 25 lecturers, assistants, etc., a total of 83. One year of collegiate work, including courses in physics, chemistry and biology and a modern language is required for admission. The course extends over four years of eight months each. The tuition fees for the four years, respectively, are $151, $136.50, $171.50 and $186.50. The Dean is Dr. Joseph P. Cobb. Total registration for 1914-15 was 86; graduates, 23. The fifty-sixth session begins Sept. 28, 1915, and ends May 25, 1916.

BENNETT MEDICAL COLLEGE, Fulton and Ada Streets.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Dropped Eclecticism and assumed present title in 1909. In 1910 it united with the Illinois Medical College and by affiliation the Medical Department of Loyola University. The first class graduated in 1870. Became an integral part of Loyola University in 1915. The faculty numbers 68. The course covers five years of thirty-two weeks each. The fees are $150 each year. The Dean is Dr. Maximilian Herzog. The total registration for 1914-15 was 393; graduates 92. The next session begins Sept. 28, 1915, and ends May 27, 1916.

JENNER MEDICAL COLLEGE, an afternoon and night school, located at 701 South Wood Street.—Organized in 1892. Classes were graduated in 1896 and in all subsequent years. The faculty numbers 48. The Secretary is Dr. John D. MacKellar. Total registration for 1914-15 was 175; graduates 24. The next session begins Sept. 13, 1915, and ends June 17, 1916. *Reported not recognized by the licensing boards of thirty-two states.*

CHICAGO HOSPITAL COLLEGE OF MEDICINE, another afternoon and night school, located at 3832 Rhodes Avenue.—Organized in 1911; chartered in 1912. Claimed to have had a registration of about 60 in 1914-15. There were 9 graduates. *Official reports indicate that the diplomas from this college are not recognized by the licensing boards of thirty-two states.*

INDIANA

Indiana, population 2,779,467, has one medical college, the Indiana University School of Medicine, located at Indian-

apolis, a city of 259,413 people, except that the work of the first year is offered also at Bloomington, the seat of the University.

Candidates for license to practice medicine in Indiana who matriculated between Jan. 11, 1910 and Jan. 11, 1911, must have completed one year of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine. Those matriculating subsequent to Jan. 11, 1911, must have completed *two years* of work in a recognized college of liberal arts. For students matriculating after June 30, 1912, this additional preliminary work must have included college courses in physics, chemistry and biology.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. The faculty consists of 72 professors and 59 lecturers, associates and assistants, a total of 131. *Two years* of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees for the four years, respectively, are $100, $100, $130, and $130. A fifth optional year leading to the "M.D. cum laude" has been added. The Secretary at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1914-15 was 152; graduates, 28. The next session begins Sept. 20, 1915, and ends June 14, 1916.

IOWA

Iowa, population 2,221,755, has two medical colleges. The College of Medicine and the College of Homeopathic Medicine of the State University of Iowa, both located in Iowa City, population 10,987.

Candidates for license to practice medicine in Iowa who graduate subsequent to Jan. 1, 1915, must have completed *two years* of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a modern language.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE. University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. The faculty is made up of 23 professors, 24 lecturers, demonstrators and assistants, a total of 47. *Two years* of collegiate work, including courses in physics, chemistry, biology and French or German, are required for admission. The course of study covers four years of thirty-six weeks each. The tuition fee for residents of Iowa is $85 per year and for nonresidents $100, plus a matriculation fee of $10 and a graduation fee of $10. The Dean is Dr. Lee Wallace Dean, Iowa City. Total registration for 1914-15 was 143; graduates, 23. The forty-sixth session begins Sept. 20, 1915, and ends June 9, 1916.

STATE UNIVERSITY OF IOWA COLLEGE OF HOMEOPATHIC MEDICINE.—Organized in 1877. The first class graduated in 1878. Class each subsequent year except 1914. The faculty is composed of 15 professors and 15 lecturers and assistants, a total of 30. The work of the first two years is taken in classes with the students of the College of Medicine of the State University of Iowa, and it has the same entrance requirements. The fees are $100 each year for nonresidents of Iowa and $85 for residents, plus a matriculation fee of $10, paid but once, and a graduation fee of $10. The Dean is Dr. George Royal. Total registration for 1914-15 was 11; graduates, 4. The thirty-eighth session begins Sept. 20, 1915, and ends June 9, 1916.

KANSAS

Population 1,784,897, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,915, and the last two years in Rosedale, a suburb of the two Kansas Cities, which together have a population of 382,142.

Candidates for license to practice medicine in Kansas who matriculated in the session of 1910-11 and thereafter must present ceredentials showing that they matriculated in and graduated from a medical college which required for admission at least one year of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course. This applies to all graduates of 1914 and thereafter.

Lawrence and Rosedale

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Rosedale. Absorbed Kansas Medical College in 1913. The faculty, including lecturers and clinical assistants, numbers 53. The requirements for admission are *two years* of collegiate work. The course covers four years of nine months each. The total fees are for each of the first two years, $30 per year (and for nonresidents of the state, $45); for the last two years $100 and $105 respectively. The Dean is Dr. S. J. Crumbine; Associate Dean, Dr. M. T. Sudler. The total registration for 1914-15 was 101; graduates, 14. The thirty-sixth session begins Sept. 15, 1915, and ends June 7, 1916.

KENTUCKY

Kentucky, population 2,350,731, has one medical college, the University of Louisville Medical Department, situated in Louisville, a city of 223,928 inhabitants.

To be eligible for license to practice medicine in Kentucky all students matriculating in and after the session of 1914-15 must have completed, in addition to an accredited four-year high school course, at least one year's work in an approved college of liberal arts, including college courses in physics, chemistry, biology and a modern language.

Louisville

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT, First and Chestnut Streets.—Organized in 1837 as the Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 the present name was assumed. In 1907 it absorbed the Kentucky University Medical Department. In 1908 it absorbed the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. One year of collegiate work is required for admission. It has a faculty of 33 professors and 59 lecturers and assistants, a total of 92. The course covers four years of thirty-two weeks each. The fees are $170 each year; graduation fee, $10. The Dean is Dr. Henry Enos Tuley. The total registration for 1914-15 was 208; graduates 68. The next session begins Sept. 27, 1915, and ends June 8, 1916.

LOUISIANA

Louisiana, having a population of 1,773,482, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 361,221.

Candidates for license to practice medicine in Louisiana who graduate in 1919 and thereafter must present evidence that they had successfully completed, at an approved college or university at least one year of work including biology, physics, chemistry and a modern language, before entering on the study of medicine. This applies to all students who matriculated in 1915 and thereafter.

New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years, except 1863-65, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. The faculty has 22 professors and 89 instructors, demonstrators, etc., a total of 111. The course covers four years of thirty-two weeks each. One year of collegiate work is required for admission. Total fees are $185 per year; graduation fee, $30. The Dean is Dr. Isadore Dyer. The total registration for 1914-15 was 286, graduates 78. The eighty-first session begins Sept. 28, 1915, and ends June 15, 1916.

MAINE

Maine, population 762,787, has one medical college, the Bowdoin Medical School, located in Brunswick and Portland, the latter having a population of 62,161.

Brunswick-Portland

BOWDOIN MEDICAL SCHOOL. The Medical Department of Bowdoin College. The first two years are given at Bowdoin College, Brunswick, the last two at Portland, building located on Chadwick Street.—Organized in 1820 as the Medical School of Maine. The first class graduated in 1821. Present title assumed in 1915. The faculty numbers 66. One year of collegiate work is required for admission. Beginning with the session of 1916-17 *two years* of collegiate work will be required. The course covers four years of eight months each. The total fees are $115 for each of the first three years and $140 for the fourth. The Dean is Dr. Addison E. Thayer, 10 Deering Street, Portland. The total number of students in 1914-15 was 70; graduates, 22. The ninety-fifth session begins Oct. 14, 1915, and ends June 22, 1916.

MARYLAND

Maryland, with a population of 1,341,075, contains two medical colleges, located in Baltimore, a city with 579,590 inhabitants. They are as follows: Johns Hopkins University Medical Department, School of Medicine of the University of Maryland and the College of Physicians and Surgeons, the last two having been merged.

To be eligible to practice medicine in Maryland, all students matriculating in the session of 1914-15 and thereafter,

in addition to a four-year high school education, must have completed a year of college work including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

Baltimore

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT, Washington and Monument Streets.—Organized in 1893. The first class graduated in 1897. The faculty consists of 37 professors and 90 clinical professors, etc., a total of 127. The requirements for admission demand that the applicant either has (a) completed the chemical-biological course which leads to the A.B. degree in the university or (b) graduated at an approved college or scientific school and has a knowledge of French and German, physics, chemistry and biology, such as may be obtained from a year's course. The course extends over four years of eight and one-half months each. The charge for tuition is $240 for the first year and $200 for each of the other three years. The Dean is Dr. J. Whitridge Williams. Total registration for 1914-15 was 361; graduates, 89. The twenty-third session begins Oct. 5, 1915, and ends June 13, 1916.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. The combined faculty numbers 188. A year of collegiate work is required for admission. The course covers four years of eight months each. The total fees are $165 each year; matriculation fee, $5; graduation fee, $30. The Dean of the University of Maryland School of Medicine is Dr. Arthur M. Shipley and the College of Physicians and Surgeons, Dr. Wm. F. Lockwood. The total number of students registered in the two schools in 1914-15 was 487; graduates, 130. The one hundred and ninth session begins Oct. 1, 1915, and ends May 28, 1916.

MASSACHUSETTS

Massachusetts, population 3,605,522, has four medical colleges: Medical School of Harvard University, Boston University School of Medicine, College of Physicians and Surgeons and Tufts College Medical School. They are all situated in Boston, a city of 733,802.

Boston

MEDICAL SCHOOL OF HARVARD UNIVERSITY, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 57 professors and 159 associates, assistants, etc., a total of 216. Candidates for admission must present either a recognized college degree with courses in inorganic and organic chemistry or credits for *two years* of work in a recognized college or scientific school, which must include courses in physics, inorganic and organic chemistry and biology. The session is four years of eight months each. The total fee for each is $225. The Dean is Dr. Edward H. Bradford. The total registration for 1914-15 was 319; graduates, 87. The one hundred and thirty-fourth session begins Sept. 27, 1915, and ends June 22, 1916.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. One year of collegiate work is required for admission; after Oct. 1, 1916, *two years* of collegiate work will be required. The faculty includes 23 professors, 50 associates, etc., making a total of 73. The course covers four years of eight months each. Total fees for each of the four years, respectively, are $177, $172, $152 and $143. The Dean is Dr. John P. Sutherland. Total registration for 1914-15 was 86; graduates, 21. The forty-third session begins Oct. 7, 1915, and ends June 7, 1916.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. It has a faculty of 31 professors and 102 assistants, lecturers, etc., a total of 133. One year of collegiate work is required for admission. The course covers four years of eight months each. The total fees are $155 each year. The Dean is Dr. Charles F. Painter. Total registration for 1914-15 was 305; graduates, 64. The twenty-second session begins Sept. 29, 1915, and ends May 29, 1916.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. The college announcement gives the names of 190 "matriculants and applicants" for the session of 1914-15, which included both dental and medical students. Fairly reliable information, however, shows that the total attendance of medical students during 1914-15 was about 85. There were 17 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of thirty-two states.*

MICHIGAN

Michigan, population 2,976,030, has three medical colleges. Two of these, the University of Michigan Department of Medicine and Surgery and the Homeopathic Medical College of the University of Michigan, are located at Ann Arbor, a city of 14,948 people. The Detroit College of Medicine and Surgery is located at Detroit, a city of 537,650 inhabitants.

To be eligible for license to practice medicine in Michigan, all students matriculating in and after the session of 1914-15, in addition to an accredited four-year high school education, must have completed at least one year's work in an approved college of liberal arts, including college courses in physics, chemistry and biology, prior to beginning the study of medicine.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. It has a faculty composed of professors and 59 associates, instructors, etc., a total of 79. The entrance requirements are *two years* of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of one modern language. The curriculum embraces four years of nine months each. The total fees for Michigan students for the entire course of four years is $350 and for others about $400. The Dean is Dr. Victor C. Vaughan. The total registration for 1914-15 was 307; graduates, 43. The sixty-sixth session begins Oct. 5, 1915, and ends June 29, 1916.

UNIVERSITY OF MICHIGAN HOMEOPATHIC MEDICAL SCHOOL.—Organized in 1875. The first class graduated in 1877. Although the work of the first two years is taken in the same classes with the Medical School of the University of Michigan, nevertheless the entrance requirements have been kept at one year of collegiate work; the requirement for the other department is two years of collegiate work! The Dean is Dr. W. B. Hinsdale. The total registration for 1914-15 was 68; graduates, 20. The next session begins Oct. 5, 1915, and ends June 9, 1916.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 250 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. Entrance requirements are one year of collegiate work. The faculty embraces 23 professors, 149 lecturers, etc., a total of 172. The course covers four years of eight months each. The fees for the four years, respectively, are $155, $130, $90 and $120. The Secretary is Dr. Joseph H. Hathaway. The total registration for 1914-15 was 197; graduates, 45. The thirty-first session begins Sept. 22, 1915, and ends June 1, 1916.

MINNESOTA

Minnesota, population 2,213,919, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis. Minneapolis and St. Paul are practically one city, and have a combined population of 580,232.

Candidates for license to practice medicine in Minnesota who graduated subsequent to June 1, 1912, in addition to an accredited four-year high school education, must have completed *two years* of work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital Medical College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. The faculty includes 46 professors and 61 instructors and assistants, a total of 107. The curriculum covers four years of nine months each and a year's internship in an approved hospital. The entrance requirements are *two years* of university work which must include one year each of physics, general chemistry, qualitative analysis, zoology or botany, and French or German, all in addition to a four-year high school course, including two years of Latin. Students entering hereafter will be required to secure a degree of B.S. or A.B. before M.D. is granted. Total fees are $150 each year. The Dean is Dr. E. P. Lyon. The total registration for 1914-15 was 208; graduates, 20. The twenty-eighth session begins Sept. 14, 1915, and ends June 8, 1916.

MISSISSIPPI

Mississippi, population 1,901,882, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 2,014 inhabitants.

Candidates for license to practice medicine in Mississippi who matriculate in the session of 1915-16 and thereafter, in addition to a standard four-year high school education, must have completed a year's work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

UNIVERSITY OF MISSISSIPPI DEPARTMENT OF MEDICINE.—Organized in 1903. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are one year of collegiate work in addition to an accredited four-year high school education. The total fees each year are, respectively, $81 and $83. The faculty numbers 14. The Dean is Dr. W. S. Leathers. The total registration for 1914-15 was 45. The thirteenth session begins Sept. 17, 1915, and ends June 1, 1916.

MISSOURI

Missouri, population 3,372,886, has five medical colleges. St. Louis, population 734,667, contains three of these, viz., the School of Medicine of St. Louis University, Washington University Medical School and the Medical Department of the National University of Arts and Sciences. Kansas City, which with Kansas City, Kan., has a total population of 376,182, has one college, the Eclectic Medical University.

The School of Medicine of the University of Missouri is at Columbia, a town of 11,371 people.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. The faculty includes 9 professors and 9 assistant professors, lecturers, etc., a total of 18. The course covers two years of nine months each. The entrance requirements are *two years* of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours, and general bacteriology, 3 hours. Total fees are $45 each year. The acting Dean is Dr. Guy L. Noyes. Total registration of students for 1914-15 was 65. The next session begins Sept. 15, 1915, and ends June 9, 1916.

Kansas City

ECLECTIC MEDICAL UNIVERSITY, 1423 Independence Avenue.—Organized at Kansas City, Mo., in 1898 with the present title. Moved to Kansas City, Kan., in 1907, and took the name of Western Eclectic College of Medicine and Surgery. Returned to Kansas City, Mo., in 1909 and resumed the present title. First class graduated in 1900. The total registration for 1914-15 was, approximately, 65; graduates, 15. *Reported not in good standing by the Missouri State Board of Health and by thirty other state licensing boards.*

St. Louis

WASHINGTON UNIVERSITY MEDICAL SCHOOL, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1841. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Assumed present title in 1911. The faculty comprises 24 professors and 63 lecturers, instructors, etc., a total of 87. *Two full years* of college work are required for admission including courses in English, physics, chemistry and biology and a reading knowledge of German. The course is four years of eight months each. The total fees for the four years are, respectively, $155, $150, $150 and $155. The Dean is Dr. Philip A. Shaffer. The total registration for 1914-15 was 75; graduates, 29. The next session begins Sept. 23, 1915, and ends June 16, 1916.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Avenue.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 52 professors, 76 lecturers and assistants, a total of 128. One year of college subjects preliminary, to the four years of medical subjects is given in the medical school. The curriculum covers four years of forty-two weeks each. The total fees are $140 each year. The total registration for 1914-15 was 188; graduates, 43. The Dean is Dr. Hanau W. Loeb. The next session begins Oct. 1, 1915, and ends June 1, 1916.

NATIONAL UNIVERSITY OF ARTS AND SCIENCES, Medical Department, Garrison and Lawton Avenues.—Organized in 1873 as the American Medical College, and Eclectic Institution. Eclecticism dropped in 1910. Absorbed the Barnes Medical College in 1911. Became the Medical Department of the National University of Arts and Sciences in 1912. Absorbed St. Louis College of Physicians and Surgeons in 1915. Two classes were graduated each year from 1874 to 1883, inclusive. Since then one class has graduated each year. The course covers four years of eight and a half months each. A five-year course is required including a preliminary year in physics, chemistry and biology. Fees: matriculation, $5; tuition each year, $115. The Secretary is Dr. E. L. Cooley. The total registration for 1914-15 was 127; graduates, 40. The next session begins Sept. 20, 1915, and ends June 10, 1916.

NEBRASKA

Nebraska, population 1,245,873, has three medical colleges. The University of Nebraska College of Medicine and the John A. Creighton Medical College of Omaha, population 133,274, and the Lincoln Medical College at Lincoln, population 45,643.

Lincoln

LINCOLN MEDICAL COLLEGE. Eclectic. Corner 13th and P Streets, Lincoln.—Organized in 1890 as the Lincoln Medical College. Became Cotner University Medical College in 1911. Affiliation with Cotner University cancelled and present title resumed in 1915. The first class graduated in 1891. The Dean is Dr. F. L. Wilmeth. The total registration for 1914-14 was 29; graduates, 5. The next session begins Sept. 15, 1915, and ends May 27, 1916.

Omaha

JOHN A. CREIGHTON MEDICAL COLLEGE, Fourteenth and Davenport Streets. It is the Medical Department of Creighton University.—Organized in 1892. The first class graduated in 1895. It has a faculty of 15 professors and 38 associates, lecturers and assistants, a total of 53. One year of collegiate work is required for admission. The course of study embraces four years of eight months each. The total fees each year are $130; matriculation fee, $5. The Dean is Dr. A. L. Murtaugh. Total registration for 1914-15 was 148; graduates, 46. The thirty-fourth session begins Sept. 1, 1915, and ends April 29, 1916.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913 when all four years were transferred to Omaha. The faculty is composed of 31 professors and 28 lecturers and instructors, total 59. *Two years* of collegiate work are required for admission including courses in physics, chemistry, zoology and German. The fees for each of the four years, respectively, are $135, $130, $120 and $120. The Secretary is Dr. Irving S. Cutter. Total registration for 1914-15 was 96; graduates, 12. The next session begins Sept. 20, 1915, and ends June 2, 1916.

NEW HAMPSHIRE

New Hampshire, population 438,662, has one medical college, located at Hanover, population 1,340.

To be eligible for license to practice medicine in New Hampshire, all students matriculating in and after the session of 1915-16, in addition to a four-year high school education, must have completed at least *two years* of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 10 professors and 2 instructors, a total of 12. *Two years* of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the B.S. degree in Dartmouth College may substitute the work of the first two years in medicine for that of the junior and senior years in the academic department. Candidates for the A.B. degree may make a similar saving of one year. The fees for the two years in medicine are, respectively, $171 and $180. Dean, Dr. John M. Gile; Secretary, Colin C. Stewart. The next session opens September 23, 1915, and ends June 21, 1916.

NEW YORK

New York State, population 9,899,761, has ten medical colleges. Seven of these, College of Physicians and Surgeons (Columbia University), Long Island College Hospital, New York Homeopathic Medical College and Hospital, New York Medical College and Hospital for Women, Cornell University Medical College, the University and Bellevue Hospital Medical College and Fordham University School of Medicine, are located in New York City, population 5,333,537. Albany Medical College is located in Albany, a city of 102,961 people. The University of Buffalo Medical Department is situated in Buffalo, population 454,112. The College of Medicine, Syracuse University, is in Syracuse, a city of 149,353 inhabitants.

Albany

ALBANY MEDICAL COLLEGE, Lancaster and Jay Streets.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915, Union University assumed full control. The faculty is composed of 19 professors and 50 lecturers, assistants, etc., a total of 69. One year of collegiate work, including college courses in physics, chemistry and biology are required for admission. The curriculum covers four years of eight months each. The fees for each year are $160. The Dean is Dr. Thomas Ordway. The total registration for 1914-15 was 173; graduates, 50. The eighty-fifth session begins September 27, 1915, and ends June 1, 1916.

Buffalo

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. The faculty is composed of 33 professors and 71 lecturers, assistants, etc., a total of 104. One year of collegiate work, including college courses in physics, chemistry and biology are required for admission. The course covers four years of eight months each. The total fees for the four years, respectively, are $185, $180, $140 and $140. The Dean is Dr. Thomas H. McKee. Total registration for 1914-15 was 191; graduates, 53. The seventieth session begins September 20, 1915, and ends June 2, 1916.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. The faculty is composed of 77 professors and 146 instructors, demonstrators, etc., a total of 223. *Two years* of collegiate work, including courses in physics, chemistry and biology are required for admission. The work covers four years of eight months each. The Dean is Dr. Samuel W. Lambert. The total fees for the first year are $255; for the second and third, $250, and $275 for the fourth year. Total registration for 1914-15 was 381; graduates, 83. The one hundred and eighth session begins Sept. 29, 1915, and ends June 7, 1916.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or New York. The faculty is composed of 48 professors and 76 assistants, lecturers, instructors, etc., a total of 124. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have such knowledge of physics, inorganic chemistry and biology as may be obtained in college by a year's course in these subjects when accompanied by laboratory work. The fees for each of the four years are, respectively, $190, $185, $185 and $200. The Dean is Dr. William M. Polk. Total registration for 1914-15 was 134; graduates, 20. the eighteenth session begins Sept. 27, 1915, and ends June 16, 1916.

FORDHAM UNIVERSITY SCHOOL OF MEDICINE, Bathgate Avenue and Fordham Road.—Organized in 1905 as the School of Medicine of St. John's College. Present title assumed in 1907. First class graduated in 1909. The faculty consists of 25 professors and 56 lecturers and

assistants, a total of 81. The course of instruction covers four years of eight and a half months each. Total fees for the four years, respectively, are $216, $216, $212 and $210. A year's work in a recognized college of liberal arts, including college courses in physics, chemistry and biology is required for admission. The Dean is Dr. William P. Healy. The total registration for 1914-15 was 209; graduates, 36. The eleventh session begins Sept. 24, 1915, and ends June 8, 1916.

LONG ISLAND COLLEGE HOSPITAL, Henry Street, near Atlantic Avenue, Brooklyn.—Organized in 1858. The first class graduated in 1860. It has a faculty of 41 professors and 72 assistants, instructors, etc., a total of 113. A year of collegiate work, including college courses in physics, chemistry and biology is required for admission. The course covers four years of eight months each. Fees: first year, $210, second year, $205, third, $200 and $200 for the fourth year. The Secretary is Dr. Otto V. Huffman. Total registration 1914-15 was 285; graduates, 76. The fifty-eighth session begins Sept. 20, 1915, and ends June 1, 1916.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, Eastern Boulevard, between Sixty-Third and Sixty-Fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title, New York Homeopathic Medical College, was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. The faculty consists of 26 professors and 44 assistants, lecturers, etc., a total of 70. The total fees for each year of the four years, respectively, are $165, $160, $150 and $180. The Dean is Dr. Royal S. Copeland. Total registration for 1914-15 was 242; graduates, 69. The fifty-sixth session begins Oct. 1, 1915, and ends May 24, 1916.

NEW YORK MEDICAL COLLEGE AND HOSPITAL FOR WOMEN (Homeopathic) 17-19 West One Hundred and First Street.—Organized in 1863. The first class graduated in 1864. The faculty numbers 65. The course covers four years of thirty weeks each. The fees for each of the four years, respectively, are $180, $175, $165 and $180. Dean is Dr. Cornelia C. Brant. The total registration for 1914-15 was 38; graduates, 8. The fifty-third session begins Sept. 23, 1915, and ends June 1, 1916.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, First Avenue and Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, founded in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department or New York University. First class graduated in 1899. The faculty is composed of 53 professors and 127 instructors, etc., in all 180. The course covers four years of eight months each. Entrance requirements are one year of collegiate work, in addition to a standard four-year high school course, including college courses in physics, chemistry and biology. The fees are $200 per year; graduation fee, $25. The Secretary is Dr. Samuel A. Brown. Total registration for 1914-15 was 364; graduates, 93. The next session begins Sept. 22, 1915, and ends June 7, 1916.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307-311 Orange Street. —Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Two years of a recognized college course are required for admission. The course covers four years of thirty-five weeks each. The total fees are $175 annually. The faculty is composed of 22 professors and 53 associate and assistant professors, lecturers and instructors. The Dean is Dr. John L. Heffron. The total enrolment for 1914-15 was 100; graduates, 16. The forty-fourth session begins Sept. 21, 1915, and ends June 14, 1916.

NORTH CAROLINA

North Carolina, population 2,339,452, has three medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,449. The Leonard Medical School is at Raleigh, population 19,883. Wake Forest College School of Medicine is at Wake Forest, population 1,443.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. One year of collegiate work is required for admission. The faculty is composed of 15 professors and 11 lecturers, assistants, etc., a total of 26. The total fees for the two years, respectively, are $120 and $125. The Dean is Dr. I. H. Manning. The total registration for 1914-15 was 80; the thirtieth session begins Sept. 9, 1915, and ends May 31, 1916.

Raleigh

LEONARD MEDICAL SCHOOL.—Colored. This department of Shaw University was established in 1882. Classes were graduated in 1886, 1888 and in all subsequent years, including 1914 when clinical teaching was discontinued. A year of collegiate work is required for admission. It has a faculty of 8. The course covers four years of seven and a half months each. The total fees for each year are $50, graduation fee, $10. The Dean is George H. Stoddard. Total registration for 1914-15 was 11. The thirty-fourth session begins Sept. 29, 1915, and ends may 12, 1916.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology numbers 10, exclusive of laboratory assistants. Only the first two years of the medical course are offered after the completion of freshmen and sophomore college work, and on this combined course the B.S. degree is conferred. Each annual course extends over nine months. The fees for each year aggregate $103. The Secretary is E. B. Earnshaw. The total registration for 1914-15 was 26. The fourteenth session begins Sept. 7, 1915, and ends May 19, 1916.

NORTH DAKOTA

North Dakota, population 686,966, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 14,827 people. It gives only the first two years of the medical course.

Candidates for license to practice medicine in North Dakota who graduated in 1912 and thereafter, in addition to a four-year high school education must have completed *two years* of work in an approved college of liberal arts including courses in Latin, physics, chemistry, botany and zoology, prior to beginning the study of medicine.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. The faculty is composed of 6 professors and 12 instructors, a total of 18. The course consists of *two years* of academic work and two years of medicine, occupying nine months each year. The total fee for each of the medical years is $50. The Dean is Dr. W. E. French. The total registration for 1914-15 was 17. The tenth session begins Sept. 21, 1915, and ends June 14, 1916.

OHIO

Ohio, population 5,026,898, has five medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 402,175 inhabitants. Cleveland, population 639,431, contains one medical school, Western Reserve University School of Medicine. Columbus, population 204,567, contains the two departments of the Ohio State University, the College of Medicine and the College of Homeopathic Medicine.

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Clifton Avenue, west of Vine Street.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. The faculty consist of 36 professors, 101 associates, assistants, etc., a total of 137. The course covers four years of eight months each. The fees are $150 a year; a matriculation fee of $3 payable but once, and a graduation fee of $25. The Dean is Dr. Christian R. Holmes. The total registration for 1914-15 was 80; graduates, 19. The next session begins Sept. 28, 1915, and ends June 10, 1916.

ECLECTIC MEDICAL COLLEGE, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843 inclusive. It has a faculty of 25 professors and 10 lecturers and assistants, a total of 35. One year of college work is required for admission. The course covers four years of eight months each. The fee is $120 for each year. The Secretary is Dr. John K. Scudder. Total registration for 1914-15 was 114; graduates, 26. The next session begins Sept. 6, 1915, and ends May 16, 1916.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 1353 East Ninth Street.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 it absorbed the Cleveland College of Physicians and Surgeons. The faculty includes 36 professors and 57 lecturers, assistants, etc., a total of 93. The curriculum embraces four years of eight and one-half months each. Three years of college work are required for admission. The total fees for each of the four years are, respectively, $162, $155, $150 and $155. The Secretary is Dr. F. C. Waite. The total registration for 1914-15 was 169; graduates, 34. The seventy-third session begins Sept. 30, 1915, and ends June 15, 1916.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Buttles Avenue and Park Street.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. The faculty consists of 43 professors and 58 lecturers, demonstrators, etc., a total of 101. *Two years* of collegiate work are required for admission. The course covers four years of eight months each. Matriculation, $5; tuition of $150 each year. The Dean is Dr. W. J. Means. The total registration for 1914-15 was *232*; graduates, 44. The next session begins Sept. 21, 1915, and ends June 14, 1916.

OHIO STATE UNIVERSITY COLLEGE OF HOMEOPATHIC MEDICINE.—Organized precipitately in 1914, when, it is stated, the property of the Cleveland Pulte Medical College of Cleveland, a Class C institution, was transferred to the Ohio State University. Classes are taught separately from the students of the College of Medicine, although anatomy and psychology are taught by teachers in the latter. Only one year of collegiate preliminary education is required, although two years are required of students of the College of Medicine. Tuition fees of only $125 are charged, whereby students of the College of Medicine are charged $150. The Dean is Dr. Claude A. Burrett. The total registration for 1914-15 was 46; graduates, 18. The next session begins Sept. 21, 1915 and ends June 14, 1916.

OKLAHOMA

Oklahoma, population 2,026,534, has one medical college, the School of Medicine of the University of Oklahoma. The work of the first and second years is given in the academic laboratories at Norman, a city of 3,724 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 83,559 and which is eighteen miles north of Norman.

To be eligible for license to practice medicine in Oklahoma, all students matriculating in and after the session of 1914-15, in addition to a four-year high school education, must have completed at least one year of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine.

Norman and Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course until 1910, when a clinical department was established at Oklahoma City. It has a faculty of 46 professors and 8 instructors, a total of 54. *One year* of collegiate work is required for admission. The course is four years of nine months each. An optional course of *six years* is offered for the degrees of B.S. and M.D. The total fees for the four years are, respectively, $50, $33, $10 and $15. The Dean is Dr. LeRoy Long, 317 East Fourth Street, Oklahoma City. The total registration for 1914-15 was 93; graduates, 20. The sixteenth session begins Sept. 21, 1915, and ends June 8, 1916.

OREGON

Oregon, population 783,239, has one medical college, the University of Oregon Department of Medicine located in Portland, a city of 260,601 population.

Portland

UNIVERSITY OF OREGON DEPARTMENT OF MEDICINE, Lovejoy and Twenty-Third Streets.—Organized in 1887. The first class graduated in 1888. A class graduated each subsequent year except 1898. Became an integral part of the University of Oregon in 1910. The Willamette University Medical Department was merged in 1913. It has a faculty of 28 professors and 35 lecturers, assistants, etc., a total of 63. Entrance requirements are one year of college work or its equivalent. The course is four years of eight months each. Fees: Matriculation, $5; tuition, $150 each year. The Dean is Dr. K. J. Mackenzie. The total registration for 1914-15 was 82; graduates, 18. The twenty-ninth session begins Oct. 1, 1915, and ends May 31, 1916.

PENNSYLVANIA

Pennsylvania, population 8,245,967, has seven medical colleges. Of these, Philadelphia, having a population of 1,657,810 contains six, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania, Medico-Chirurgical College of Philadelphia and Temple University Department of Medicine. The other school, the School of Medicine of the University of Pittsburgh, is situated in Pittsburgh, a city of 564,878.

To be eligible for license to practice medicine in Pennsylvania, students matriculating in the session 1914-15 and thereafter, in addition to a four-year high school education must have completed a year's work either in an approved college of liberal arts or in a preliminary year in the medical college, including college courses in physics, chemistry and biology, before beginning the study of medicine. He must also have completed an internship of at least one year in an approved hospital.

Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772-79, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania was adopted in 1909. It granted the first medical diploma issued in America. The faculty is made up of 49 professors, associate, adjunct and assistant professors, and 122 lecturers, associates, instructors, etc., a total of 171. The minimum requirements for admission are a standard four-year high school course or its equivalent, plus two years of work in an approved College of Arts and Science, including courses in French or German, and in physics, chemistry and general biology or zoology, with appropriate laboratory exercises. The course embraces four years of study of thirty-four weeks each. The total fees for each of the four years are, respectively, $233, $210, $210 and $214. The Dean is Dr. William Pepper. Total registration for 1914-15 was 276; graduates, 57. The one hundred and fiftieth session begins Sept. 24, 1915, and ends June 21, 1916.

JEFFERSON MEDICAL COLLEGE, Tenth and Walnut Streets.—Organized in 1825 as the Medical Department of Jefferson College, Cannonsburg. The first class graduated in 1826. The present title was assumed in 1838. It has a faculty of 21 professors and 135 lecturers, demonstrators, etc., a total of 156. Entrance requirements are a completed course in a standard secondary school and in addition a preliminary year in a medical college devoted to physics, chemistry and biology, or two years of work in a college of liberal arts including the subjects specified. The course of study covers graded work of four years of eight and a half months each. The tuition is $200 a year, with a matriculation fee of $5, paid but once. The Subdean is Dr. Ross V. Patterson. The total registration for 1914-15 was 556; graduates, 145. The ninety-first session begins Sept. 24, 1915, and ends June 3, 1916.

MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA, Cherry Street, between Seventeenth and Eighteenth Streets.—Organized in 1881. The first class graduated in 1882. The faculty is composed of 35 professors and 74 lecturers, assistants, etc., a total of 109. Entrance requirements are a completed course in a standard secondary school and in addition a preliminary year devoted to college courses in physics, chemistry and biology. The work embraces four years of eight months each. The fees for each are $180; matriculation fee, paid but once, $5. The Dean is Dr. Seneca Egbert. The total registration for 1914-15 was 297; graduates, 82. The thirty-fifth session begins Sept. 24, 1915, and ends June 9, 1916.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Twenty-First and N. College Avenue. Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 11 professors and 46 assistants, lecturers, etc., in all 57. Entrance requirements are a completed course in a standard secondary school, and in addition *two years* of collegiate work including courses in physics, chemistry and biology. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $187, $181, $183 and $179.50. The Dean is Dr. Clara Marshall. The total registration for 1914-15 was 78; graduates, 30. The sixty-sixth session begins Sept. 15, 1915, and ends May 31, 1916.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 226 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition a preliminary year devoted to college courses in physics, chemistry and biology. It has a faculty of 40 professors and 40 lecturers, instructors, etc., in all 80. The work covers four years of eight and a half months each. Total fees for the four years, respecively, are $185, $185, $175 and $175. The Dean is Dr. William A. Pearson. The total registration for the college year 1914-15 was 85; graduates, 22. The sixty-eighth session begins Sept. 27, 1915, and ends June 1, 1916.

THE TEMPLE UNIVERSITY DEPARTMENT OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. The faculty numbers 97. The fees for each of the four years, respectively, are $168.50, $167, $151 and $161. The Dean is Dr. Frank C. Hammond. The total registration for 1914-15 was 63; graduates, 24. The fifteenth session begins Sept. 15, 1915, and ends June 5, 1916.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Grant Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. The faculty is composed of 41 professors and 53 associates, assistants, etc., 94 in all. Entrance requirements are *two years* of recognized college work, to have included essentially courses in chemistry (inorganic and organic), physics, biology and German or French, based on a four-year high school preparation. It is possible for students to get the degree of B.S. and M.D. in six years. The course of study for medicine is four years of eight and a half months each. The tuition is $210 a year. The Dean is Dr. Thomas S. Arbuthnot. The total registration for 1914-15 was 103; graduates, 10. The thirtieth session begins Sept. 27, 1915, and ends June 15, 1916.

SOUTH CAROLINA

South Carolina, population 1,590,015, has one medical college, situated in Charleston, a city of 60,121 people.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, Lucas and Calhoun Streets.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools coutinued as separate institutions until they were merged in 1913. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. It has a faculty of 22 professors and 42 lecturers, instructors, etc., a total of 64. The course covers four years of eight months each. One year of collegiate work including courses in physics, chemistry and biology is required for admission in addition to a standard high school preparation. Beginning with the session of 1916-17 *two years* of preliminary collegiate preparation will be required. The total fees are $140 each year. The Dean is Dr. Robert Wilson, Jr. Total enrolment for 1914-15 was 82; graduates, 25. The eighty-seventh session begins Oct. 1, 1915, and ends June 1, 1916.

SOUTH DAKOTA

South Dakota, population 661,583, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a town of 2,187 people.

To be eligible for license to practice medicine in South Dakota, graduates of 1915 and thereafter must show that they matriculated in and graduated from medical colleges which required at least *two years* of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. This affects all students who matriculated in the session of 1911-12 and thereafter.

Vermilion

UNIVERSITY OF SOUTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1907. Offers only the first two years of the medical course. *Two years'* work in a college of liberal arts is required for admission. The fees are

$60 each year. The faculty numbers 10. The Dean is Christian P. Lommen, B.S. The total registration for 1914-15 was 12. The ninth session begins Sept. 21, 1915, and ends June 13, 1916.

TENNESSEE

Tennessee, population 2,254,754, has four medical colleges. Of these Vanderbilt University Medical Department and Meharry Medical College are situated in Nashville, a city with a population of 114,899. The College of Medicine of the University of Tennessee and the University of West Tennessee College of Medicine and Surgery are located in Memphis, population 143,231.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, three buildings, 879 Madison Avenue, 880 Monroe Avenue and 718 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department University of Tennessee 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The Trustees of the University of Nashville by formal action of that Board named the University of Tennessee College of Medicine as its legal successor in medical teaching, transferring all of its college and hospital equipment to the successor. This college then removed to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Entrance requirements are a completed secondary education plus one year of collegiate work. The fees are $100 per year for bona fide residents of the state, and $150 per year for non-residents; for the fourth year, $175. The Dean is Dr. Herbert Thomas Brooks. Total registration for 1914-15 was 255; graduates, 77. These figures include 43 students from the Lincoln Memorial University, 12 of whom were granted diplomas by the latter this year. The next session begins Sept. 20, 1915, and ends June 3, 1916.

UNIVERSITY OF WEST TENNESSEE COLLEGE OF MEDICINE AND SURGERY, Colored. 1190 South Phillips Place.—Organized in 1900. The first class graduated in 1904, and a class graduated each subsequent year. It has a faculty of 20. The course covers four years. The fees are $55 per year; graduation $10 extra. The Dean is Dr. M. V. Lynk. Registration for 1914-15 was 53; graduates, 29. The sixteenth session begins Sept. 15, 1915, and ends May 4, 1916.

Nashville

VANDERBILT UNIVERSITY MEDICAL DEPARTMENT.—This school was founded in 1874. The first class graduated in 1875. The faculty consists of 25 professors and 59 lecturers, a total of 84. One year of collegiate work is required for admission. The course covers four years of nearly eight months each. The total fees for each of the first three years are $150, and for the fourth year, $175. The Dean is Dr. L. E. Burch. The total registration for 1914-15 was 294; graduates, 97. The forty-second session begins Sept. 29, 1915, and ends June 14, 1916.

MEHARRY MEDICAL COLLEGE. Colored. Fourth Avenue, South, and Chestnut Street.—This school was organized in 1876 as the Medical Department of Tennessee College, which became Walden University in 1900. First class graduated in 1877. The faculty is made up of 14 professors and 11 instructors, demonstrators, etc., 25 in all. The work embraces four years of thirty weeks each. The total fees for each of the first three years are $70 and for the fourth year, $80. The Dean is Dr. G. W. Hubbard. Total registration for 1914-15 was 354; graduates, 72. The fortieth session begins Sept. 7, 1915, and ends April 20, 1916.

TEXAS

Texas, population 4,257,854, has three medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 40,289 inhabitants. The Fort Worth School of Medicine is at Fort Worth, population 94,494. The Baylor University College of Medicine is located in Dallas, population 111,986.

To be eligible for a license to practice medicine in Texas, students matriculating in the session of 1914-15 and thereafter must have completed a year of collegiate work including courses of physics, chemistry, biology and a modern language, in addition to a standard four-year high school course.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 720 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University at Waco. It acquired the charter of Dallas Medical College in 1904. The first class graduated in 1901. The faculty numbers 43. Entrance requirement is one year of college work in addition to a four-year high school education. The course is four years of eight months each. The fees are $115 each year; matriculation fee of $5, paid but once; graduation fee, $15. The Dean is Dr. E. H. Cary. Total registration for 1914-15 was 56; graduates, 19. The sixteenth session begins Oct. 1, 1915, and ends May 31, 1916.

Fort Worth

FORT WORTH SCHOOL OF MEDICINE, Medical Department of Texas Christian University, Calhoun and Fifth Streets.—Organized in 1894 as the Fort Worth School of Medicine. It was the Medical Department of the Fort Worth University until 1911, when it became affiliated with Texas Christian University. The first class graduated in 1895. It has a faculty of 27 professors and 48 lecturers, assistants, etc., in all 75. The course covers four years of nine months each. The total fees for each of the four years, respectively, are $114, $113, $108 and $125. The Dean is Dr. Samuel A. Woodward. The total registration for 1914-15 was 43; graduates, 11. The twenty-second session begins Sept. 20, 1915, and ends June 9, 1916.

Galveston

UNIVERSITY OF TEXAS DEPARTMENT OF MEDICINE, on the Strand, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. It has a faculty of 16 professors and 13 lecturers, a total of 29. The curriculum embraces four years of eight months each. The entrance requirement is one year of collegiate work in addition to a four-year high school education. The total fees for the four years, respectively, are $60, $30, $15 and $10. The Dean is Dr. William S. Carter. Total registration for 1914-15 was 189; graduates, 34. The twenty-fifth session begins Oct. 1, 1915, and ends May 31, 1916.

UTAH

Utah, population 414,518, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 109,530 people.

To be eligible to secure licenses to practice medicine in Utah, students matriculating in and after the session of 1912-13, in addition to a four-year high school education, must have completed at least one year of collegiate work prior to beginning the study of medicine, this preliminary college work to have included college courses in physics, chemistry and biology.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Gives only first two years of the medical course. Each course covers thirty-six weeks. *Two years* of collegiate work are required for admission. The medical faculty consists of 12 professors and 8 lecturers and assistants, a total of 20. The fees are $70 each year for residents, and $95 each year for non-residents. The Dean is Dr. Perry G. Snow. Total registration for 1914-15 was 27. The ninth session begins Sept. 16, 1915, and ends June 9, 1916.

VERMONT

Vermont, population 361,205, has one medical school, located at Burlington, a town of 21,247 people.

Students matriculating in and after the session of 1912-13 who desire to practice medicine in Vermont must have obtained a preliminary training of at least one year of collegiate work in addition to a standard four-year high school education, this additional year's work to include college courses in physics, chemistry and biology.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. The faculty numbers 41. One year of college work in addition to a standard four-year high school education is required for admission. The course of study covers four years of nine months each. The total fees for each of the first three years are $145, and $170 for the fourth year. The Dean is Dr. H. C. Tinkham. The total registration for 1914-15 was 102; graduates, 41. The next session begins Sept. 29, 1915, and ends June 28, 1916.

VIRGINIA

Virginia, population 2,150,009, has two medical colleges, one the Department of Medicine of the University of Virginia, situated in Charlottesville, population 6,765, and the Medical College of Virginia at Richmond, population 134,917.

Only graduates of medical colleges registered by the Virginia State Board of Medical Examiners are eligible to obtain licenses to practice medicine in this state. Medical colleges to be so registered must require of all students admitted in the sessions of 1914-15 and thereafter, completion of at least one year of collegiate work including college courses in physics, chemistry and biology, in addition to a standard four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. It has a faculty of 14 professors and 22 lecturers, instructors, assistants, etc., a total of 36. The requirements for admission are the completion of a four-year high school course, or its equivalent, and a year of college work devoted to chemistry, physics and biology. In 1917 and thereafter *two years* of preliminary college preparation will be required for admission, including the specified sciences and French or German. Total fees each year are $140; matriculation fee, $10. The Dean is Dr. R. H. Whitehead. The total registration for 1914-15 was 108; graduates, 26. The eighty-seventh session begins Sept. 16, 1915, and ends June 14, 1916.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Marshall and College Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College

of Medicine was merged. In 1914 the North Carolina Medical College was merged. Classes were graduated in 1840 and in all subsequent years. It has a faculty or 45 professors and 88 lecturers, instructors, etc., a total of 133. The requirement for admission is a four-year high school education and in addition *two years* of collegiate work, including courses in physics, chemistry, biology and French or German. The course embraces four years of eight months each. Fees, $164 for the first year and $144 for each subsequent year; graduation fee, $30. The Dean is Dr. Stuart McGuire. The total registration for 1914-15 was 391; graduates, 107, including 52 students of the North Carolina Medical College and 19 who were granted degrees by the latter. The eighty-seventh session begins Sept. 21, 1915, and ends June 6, 1916.

WEST VIRGINIA

West Virginia, population 1,332,910, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 12,239 population.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. One year of work in an approved college of liberal arts is required for admission. In 1917 and thereafter *two years* of college work will be required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 10. Fees: For residents of the state, $25 each year; for nonresidents, $50. The Dean is Dr. John N. Simpson. The total registration for 1914-15 was 19. The next session begins Sept. 13, 1915, and ends June 14, 1916.

WISCONSIN

Wisconsin, population 2,446,716, has two medical colleges, the Medical School of the University of Wisconsin, which teaches the first two years of the medical course, and is located at Madison, a city of 29,469 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 417,054 people.

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL.—Organized in 1907. Gives only the first two years of the medical course. For matriculation at least *two years* in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 11 professors and 14 lecturers, instructors, etc., a total of 25. Tuition fees: For residents of the state, $70 each year; for nonresidents, $170. The Dean is Dr. Charles R. Bardeen. The registration for 1914-15 was 96. The eighth session begins Sept. 20, 1915, and ends June 21, 1906.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, Fourth Street and Reservoir Avenue.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. It has a faculty of 41 professors and 63 assistants, instructors, etc., a total of 104. The entrance requirements include, in addition to a four-year high school education, *two years* of college work, including courses in physics, chemistry, biology and a modern language. The curriculum is for four years of thirty-four weeks each. The total fees for the four years, respectively, are $170, $170, $170 and $195. The Dean is Dr. Louis F. Jermain. The registration for 1914-15 was 125; graduates, 44. The fourth session begins Oct. 1, 1915, and ends June 15, 1916.

PHILIPPINE ISLANDS

The Philippine Archipeligo, having a population (estimated 1914) of 8,460,052, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the Medical Faculty of the University of St. Thomas. They are located in the city of Manila, which in 1910 had a population of 234,409.

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE AND SURGERY, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. Present title in 1913. The faculty includes 22 professors and 44 lecturers, assistants, etc., a total of 66. *Two years* of collegiate work leading to the degree of Bachelor of Arts are required for admission. The course extends over five years of nine months each with an additional sixth year of intern service. The Dean is Dr. William E. Musgrave. The total registration for 1913-14 was 82; graduates, 9. The eighth session began July 1, 1914, and ended March 30, 1915.

CANADA

The Dominion of Canada has nine medical colleges, all but one of which require a five-year course, including in the first year courses in physics, chemistry and biology. This course is practically equal to that in the colleges of the United States which require one year of college work for admission, including the science courses named. None of the Canadian colleges has a fixed minimum requirement of two years of collegiate work, or its equivalent, preliminary to or as a part of the medical course. A new medical school at Edmonton, Alberta, gives only the first two years of the medical course, or three years including the preliminary science year.

Alberta

UNIVERSITY OF ALBERTA, FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Offers only the first three years of the four-year medical course, including the preliminary science year. The faculty numbers 10. Fees for the first year are $60; for the second and third years, each $75. The registrar is Cecil E. Race, B.A. The registration for 1914-15 was 40. The third session begins Sept. 28, 1915, and ends May 17, 1916.

Manitoba

MANITOBA MEDICAL COLLEGE, Winnipeg.—It is the Medical Faculty of the University of Manitoba. Organized in 1883, first class graduated in 1886 and a class graduated each subsequent year. The faculty numbers 69. The fees are $155 for the first year and $150 for each subsequent year. The entire course covers five years, the first year including courses in physics, chemistry and biology. The Dean is Dr. H. H. Chown, 261 Broadway, Winnipeg. Total registration for 1914-15 was 126; graduates, 29. The next session begins Sept. 22, 1915, and ends May 12, 1916.

Nova Scotia

DALHOUSIE UNIVERSITY, FACULTY OF MEDICINE, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the University and the Board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. It has a faculty of 35 professors, lecturers and demonstrators. Requires matriculation examination and a graded course of five years, including preliminary courses in physics, chemistry and biology. Total fees for the five years, respectively, are $131, $124, $117, $117 and $117. Total registration for 1914-15 was 70; graduates, 14. The Secretary is Dr. A. A. W. H. Lindsay, 319 Pleasant Street, Halifax, N. S. The next session begins Sept. 8, 1915, and ends May 4, 1916.

Ontario

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. The course of study covers five years of eight months each, the first year including courses in physics, chemistry and biology. It has a faculty of 51 professors and 134 lecturers, associates, etc., a total of 185. The fees are $150 each year; graduation fee $8. The Secretary is Dr. A. Primrose. The total registration for 1914-15 was 568; graduates, 112. The next session begins Sept. 28, 1915, and ends May 27, 1916.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1853, and a class graduated each subsequent year. The faculty was originally a department of the University, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became an integral part of Queen's University. The faculty includes 25 professors and 14 assistants, instructors, etc., a total of 39. The fees amount to $105 each year; fee for M.D., C.M. degrees, $30. The course covers five years of seven months each, the first year including courses in physics, chemistry and biology. The registration in 1914-15 was 168; graduates, 65. The Dean is Dr. J. C. Connell. The next session begins Sept. 13, 1915, and ends April 26, 1916.

WESTERN UNIVERSITY, FACULTY OF MEDICINE, London.—Organized in 1881, first class graduated in 1883, and a class graduated each year subsequently. The Faculty of Medicine became an integral part of Western University in 1913. The faculty numbers 39. The course is five years of eight months each, the first year including courses in physics, chemistry and biology. The total fees each year are $150; matriculation fee $15; graduation fee $35. The Dean is Dr. H. A. McCallum. Total registration for 1914-15 was 75; graduates, 12. The next session begins Oct. 1, 1915, and ends June 1, 1916.

Montreal

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University and graduated under this university auspices in 1833. No session between 1836-39 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. The course extends over five years of eight months each, including the preliminary year devoted to physics, chemistry and biology. The faculty numbers 130. The total fees for the five years, respectively are $174, $174, $181, $174 and $204. The total registration for 1914-15 was 390; graduates, 60. The Registrar is Dr. John W. Scane. The next session begins Oct. 1, 1915, and ends June 6, 1916.

MONTREAL SCHOOL OF MEDICINE AND SURGERY, Montreal.—Organized in 1843, incorporated in 1845. In 1891, by act of parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name assumed in 1911. A class was graduated in 1845 and in each subsequent year. The faculty numbers 70. The course extends over five years, including preliminary courses in physics, chemistry and biology. The Dean is Dr. E. P. Lachapelle. The total registration for 1914-15 was 136; graduates, 15. The next session begins Oct. 1, 1915, and ends June 20, 1916.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 24. The fees are $60 each year. The course extends over five years, the first year including courses in physics, chemistry and biology. The Dean is Dr. Edwin Turcot, Quebec. Total registration for 1914-15 was 81; graduates, 13. The next session begins Sept. 14, 1915, and ends June 1, 1916.

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SATURDAY, AUGUST 21, 1915

MEDICAL EDUCATION—A REVIEW OF FIFTEEN YEARS' PROGRESS

We publish this week, for the fifteenth consecutive year, complete statistics regarding medical education in the United States. During these fifteen years there has been a most remarkable and encouraging improvement, and it seems worth while to review the measures which have brought about the excellent results.

BEGINNING OF THE CAMPAIGN

In 1900, THE JOURNAL began the collection of statistics regarding medical colleges, students and graduates. The results that first year were so unsatisfactory that the data gathered were not published. The next year, however, the returns were much better and, in 1901, the first Educational Number of THE JOURNAL was published. There were 159 medical colleges included in the statistics. It was a matter of common knowledge that many of the colleges then existing were joint-stock corporations, conducted largely for the profit of their owners. It was also well known that by many of the colleges little or no attention was paid to admission requirements. At that time, little was known regarding the qualifications of the teachers, the possession and equipment of laboratories, or the extent and use made of clinical material. Sectarian medicine had reached its zenith in 1901, there being twenty-two homeopathic and ten eclectic colleges. In all colleges included in the statistics, there was an enrolment of 26,417 students, and of these, 5,444 were graduated.

By the collection and publication of such data, in 1901, a beginning was made in the great campaign for the improvement of medical education. The information published provided a fixed point from which future progress could be measured. It also showed the necessity, and furnished the impetus which led to the creation of a permanent committee of the American Medical Association — the Council on Medical Education — to centralize its efforts in this particular work. The statistics were collected and published by THE JOURNAL annually for five years, however, before the Council began active work.

PROGRESS FROM 1906 TO 1910

Naturally, one of the functions of the Council on Medical Education was that of developing the work begun by THE JOURNAL in collecting and publishing statistics relating to medical education. Permanent files for this information were started, and a careful study of medical education begun. An annual conference was held, to which all organizations interested in medical education were requested to send delegates, and in this way a free floor was established for the discussion of educational problems. In 1906, two educational standards were suggested, one for immediate acceptance, and another, termed the "ideal" standard, for future adoption. To secure more reliable information regarding the work of the various medical colleges in 1907 and 1909, respectively, two complete tours of inspection were made, and the first two classifications prepared, the second of which was published in 1910. A special campaign was carried on in cities in which two or more weak medical colleges existed, urging that such institutions merge and in that way form one stronger institution.

By 1910, the number of medical students had been reduced from 28,142 to 21,526, the number of graduates from 5,600 to 4,440, and the number of medical colleges from 162 to 131. Meanwhile, many of the institutions had undergone a remarkable internal development: better teachers had been employed, better buildings erected, new laboratories established, and better clinical facilities secured. Furthermore, a remarkable improvement had been made in entrance standards. The number of medical colleges requiring for admission, in addition to a high school education, one or more years of collegiate work, had been increased from five to thirty-five, and eight state licensing boards had adopted a similar standard of preliminary education for those who were to secure licenses to practice medicine in those states. Through the inspections and other means of verifying the data collected, the information published each year in the Educational Number was verified and made more reliable. A complete list of medical colleges abroad[1] was also compiled, and later a chart[2] was published showing the educational standards of the European countries in comparison with those of the United States.

PROGRESS FROM 1910 TO 1915

During the second five-year period of the Council's work, between 1910 and 1915, the general study of medical education was continued. The information regarding all medical colleges existing and extinct was perfected sufficiently to enable the publication of a life chart[3] by means of which, for the first time, an accurate knowledge could be had as to the number of medical colleges existing in the United States in any

1. THE JOURNAL A. M. A., Aug. 17, 1907, p. 596.
2. THE JOURNAL A. M. A., Aug. 20, 1910, p. 680.
3. THE JOURNAL A. M. A., Aug. 23, 1913, p. 578.

year since the Department of Medicine of the College of Philadelphia — now the University of Pennsylvania — was organized in 1765. To secure a better record of the history and educational qualifications of medical students, and facts regarding their promotion from class to class, a medical students' register was established. Here, again, the Council has received the hearty support and a gratifying cooperation from the majority of medical colleges. Two other complete inspections of medical colleges were made, and two new classifications published.

During this second five-year period, twenty medical colleges were merged with others, and nineteen became extinct, thus further reducing the total number from 131 to ninety-five. The number of students also was reduced, from 21,526 to 14,891, and the total number of graduates from 4,440 to 3,536. Meanwhile, the number of medical colleges which had adopted the one or two years of collegiate work for admission was increased from thirty-five (27 per cent.) to eighty-three (88 per cent.), and the number of state licensing boards holding to these higher requirements was increased from eight to eighteen. Not only had 88 per cent. of all medical colleges adopted the higher entrance requirements, but also through the reliable information collected by the Council, the methods employed by each college in admitting students, and the strictness with which the standards were enforced were known with fair accuracy. The Council is now in position, therefore, to call attention to faulty methods and "paper standards," which were so common before this campaign for improvement began. The continuous agitation for better conditions in medical education appealed to philanthropists to such an extent that endowments for medical education were greatly increased, and large gifts for medical buildings, new laboratories, scholarships, endowed chairs and teaching hospitals have become of frequent occurrence. In several instances the teaching plants of medical schools — notably the medical schools of Harvard University, Washington University and the University of Minnesota — have been extensively remodeled or entirely rebuilt. A similar reconstruction is under way for the medical school of Columbia University.

The session of 1914-1915 marks an important epoch in the history of medical education in this country, since it witnessed the general adoption of higher entrance qualifications, namely, one or more years of college work, including courses in physics, chemistry and biology. At the beginning of the session, forty-three medical colleges, for the first time, began the enforcement of the higher requirements. The standard which had been termed "ideal" in 1905, therefore, became the essential standard for the session of 1914-1915. Altogether, the progress in the last fifteen years has been remarkable, and especially so since the creation of the Council on Medical Education in 1905. In fact, the progress has far exceeded the highest expectations of those who were acquainted with the serious conditions existing at the time the campaign for improvement began. Many institutions which were conducted for the profit of their owners have been closed; the number of high-grade, well-equipped and well-endowed medical colleges, however, has been greatly increased.

VALUE OF THESE STATISTICS

The first essential for progress in any enterprise is to have an accurate knowledge of the basic facts. The collection and publication of these statistics have enabled those interested in medical education to realize the needs, to note the progress made and to plan for still further improvement. Many medical colleges have been closed in this general reorganization of medical education, and the records of some have been lost. Nevertheless, in the records of the Council on Medical Education, there is definite and official information regarding the students and graduates of most of these, so that their interests are thereby protected. By having accurate information regarding medical graduates, the Council has an excellent means of checking the reports of state licensing boards, thereby making those reports and statistics based on them more reliable. From the information published, the prospective medical student is enabled to make a more intelligent and wise choice of a medical school. Above all, however, these statistics have led to an annual output of an army of better trained physicians — trained to use the latest and best methods in the recognition, treatment and prevention of disease. The public will undoubtedly profit by the change.

THE BODY TEMPERATURE OF EUROPEANS IN THE TROPICS

Opinions as to the effect of tropical heat on the body temperature of Europeans are somewhat conflicting. Some investigators maintain that it is raised by a small amount—less than 1 degree Fahrenheit—and that this rise is ordinarily more marked during the first few weeks of residence in the tropics. On the other hand, many investigators have found the body temperature no higher in the tropics than elsewhere. From observations on the mouth temperatures of 600 United States soldiers serving in the Philippines, made at quarterly intervals during twelve months, Chamberlain[1] reported a mean temperature of 98.7. On two occasions, 473 soldiers observed immediately after drill showed mean mouth temperatures of 98.96 and 98.78, which are in accord with records obtained under somewhat similar conditions of exercise at Vancouver, with an air temperature of 50.

1. Chamberlain, W. P.: Am. Jour. Trop. Dis. and Prev. Med., 1913, i, 12.

Chamberlain concluded that the mean normal temperature for white men living in the Philippines differs very little from that found in the cooler climate of the United States. His figures have recently been criticized by Young,[2] because they were obtained by thermometer readings from the mouth. It is now realized that the mouth temperature is not a reliable index of the internal temperature of the body. The records from the rectum or urine are far more dependable and are almost invariably higher than those obtained by mouth. This would be a minor criticism of the cases in point if the discrepancies between the mouth and rectal temperatures were in the nature of a constant difference. It may actually happen, however, that the effect of exercise may cause the mouth temperature as usually recorded to fall, while the rectal temperature rises, as one would expect immediately after vigorous muscular activity. The mouth cavity is cooled by rapid breathing or environmental influences that do not affect the internal temperature as measured in other places. Young reports that, in his experience, even on waking in the morning, the difference between the average of the mouth and the rectum in some individuals was more than 1 degree Fahrenheit, while the difference was much greater after exercise than when at rest, amounting frequently in certain subjects to as much as 3 degrees.

Fallacious conclusions, accordingly, are liable to follow temperature observations in the mouth alone, even under comparable conditions of bodily activity. Young[2] reminds us, furthermore, that another source of error may lie in the fact that the body temperature of a healthy person varies considerably during the twenty-four hours, even when no voluntary muscular work is performed. With exercise this variation, even in a temperate climate, is much greater, and in a hot climate a considerable rise of rectal temperature is produced by a very small amount of muscular effort. The calculation of a mean body temperature from a series of observations taken at intervals during the day is thus likely to yield very discordant results. Such a mean temperature, moreover, is in itself of little value, since it gives no indication of the changes which may take place; it seems, therefore, more rational to determine the range of variation of body temperature in health.

Taking into account the possible sources of error, Young has reported a new series of observations from the Australian Institute of Tropical Medicine in north Queensland. Tropical Australia differs from most other places in the tropics in that there is practically no black population, and the whole of the work is carried out by white people, who conform to the same working hours as in temperate climates. The climate is a typical monsoonal one, the rainy season occurring during the hot months of the year. The observations were made in Townsville, where from November to April the wet bulb thermometer seldom falls below 70 F. in the daytime, and on many occasions rises above 80. It is sometimes stated that in the tropics, where the inspired air is warm and moist, these differences do not exist, and the temperature of the mouth approximates closely to that of the rectum. But Young has found that the temperature of the mouth of Europeans living in the tropics is often considerably lower than that of the rectum, and this difference is generally much more marked after exercise, just as in temperate climates. The temperature of the mouth is thus not reliable as a measure of the body temperature. During complete rest the rectal temperature did not show any marked variations from the limits of temperature observed in Europe. A considerable rise in the rectal temperature was produced by slight muscular work, and this was usually maintained for some time after the work had ceased. The high rectal temperatures observed throughout the day were due solely to muscular exertion.

2. Young, W. J.: Observations Upon the Body Temperature of Europeans Living in the Tropics, Jour. Physiol., 1915, xlix, 222.

MIXED VACCINES

In recent years the use of drugs in the treatment of the sick has been supplemented to a great extent by the use of serums and vaccines. A commercialism has developed in the sale of these products, however, which threatens to rival that connected with the supplying of drugs, the shotgun mixed vaccines taking the place of shotgun nostrums. The difference is that in the case of vaccines it is the doctor who is directly duped, and not the layman; the latter is unable to use these products as he uses drugs taken by the mouth.

The purveyors of mixed stock vaccines claim that most infections are due to a mixture of organisms. For this reason, they say it is reasonable to use a mixture of several organisms supposedly concerned in the causation of the morbid condition. It is claimed, therefore, that mixed stock vaccines are legitimate and that their use should be encouraged by recognition on the part of the Council on Pharmacy and Chemistry, and that these products should not be placed in the same class with the shotgun proprietary mixture of drugs.

When we consider the infections, the etiology of which is known, there does not seem to be any evidence whatever that they are caused by the action of more than a single organism: is not the diphtheria bacillus the sole cause of diphtheria, the tetanus bacillus of tetanus, the meningococcus of meningitis, the typhoid bacillus of typhoid fever, and so on? For some of these, in addition to the fulfilment of Koch's postulates, we have specific antiserums which, without aid from "the other germs at work," exercise a definite curative effect. It would seem,

then, that instead of few, if any, infections being due to a single organism, the reverse is the case. The mere presence of a multiplicity of organisms in cultures taken from an infected region by no means proves that the symptoms are due to all the organisms.

Before we can justify the use of mixed vaccines at all, it must be proved that the organisms composing the vaccine act in symbiosis. It is true that there is an occasional association of two or more organisms (pathogenic and not saprophytic), but the association in the great majority of cases is accidental, as, for example, when an influenzal meningitis is superimposed on a tuberculous one. When such association has been demonstrated bacteriologically, then, and not till then, might there be justification for using the mixed vaccine; but even in this case there is no good reason why the two vaccines should be mixed and not put up separately, the mode of injection, whether separately or combined, and the dosage to be determined in each particular case. The so-called "bacteriologic diagnosis," endorsed and demanded by the conscientious advocates of vaccine therapy, is entirely out of the question at present in cases for which mixed vaccines are urged by certain manufacturers. The organisms in mixed stock vaccines often are common saprophytic residents of mucous passages, and their mere presence in cultures taken, sometimes none too carefully, from diseased processes of those passages certainly proves nothing, except their presence. Thus, "for the prophylaxis and treatment of common colds, mixed infections of the respiratory mucous membranes, acute and chronic catarrhal conditions of the nose, throat and respiratory organs," this mixture of vaccines is recommended: *Bacillus influenzae, Staphylococcus aureus, Staphylococcus albus,* streptococcus, pneumococcus, *Micrococcus catarrhalis* (group). For pyorrhea practically the same mixture is recommended with the addition of diphtheria bacilli. Equally elaborate mixtures of vaccines are being pushed for the treatment of gonorrhea and its complications, to wit: gonococci, *Staphylococcus aureus, Staphylococcus albus,* streptococci, *Bacillus coli,* diphtheria bacilli. The indications for this mixture are given as gonorrheal epididymitis, acute and chronic gleet, gonorrheal conjunctivitis, prostatitis, rheumatism. Such ready-made mixtures (of killed bacteria or bacterial products—phylacogens) that may or may not contain the vaccine of the real cause of the disease are the modern equivalent of the polypharmacy of old.

The essential basis of "vaccine therapy" is the use of the specific organism or its products, but the use of such preparations has gone far beyond such limitation. We are now advised by commercial houses that, when the specific organism is not known, a mixed vaccine or the mixed products of a number of organisms be used in the hope, it is to be supposed, that one of them may exert some specific action.

It is recognized that the shotgun prescription is unscientific and an admission on the part of its user of his failure to arrive at an accurate diagnosis; the same is true of the mixed stock vaccines. There is the added possibility of harm, because, as expressed by Vaughan, "the parenteral administration of any foreign protein is always attended by the possibility of harm." This warning applies not only to the mixed vaccines composed of the whole killed bacteria but also to the mixed filtered metabolic products of a number of bacteria (phylacogens) which, on account of the possible presence of free toxic products, have additional potentialities for harm.

The absurdity of some of the uses for mixed vaccines, as stated in some of the advertising matter, is nothing short of grotesque: There is a mixed vaccine for hay fever — and the statement is made that pollen irritation favors the development of pathogenic bacteria in the respiratory tract, and that these bacteria then become a primary factor of the disease! (This is reminiscent of the old idea of "bilious" fever "turning into typhoid"!) It is further stated that the immunizing influence of an appropriate bacterin will cure the hay fever or so modify it as to cause little distress!

Vaccine therapy undoubtedly in some cases is a most valuable method of treatment; but when the claim is made that a combination of the dead bodies or the filtered products of a number of different bacteria are useful for the treatment of several diseases, each with a different specific cause, the suggestion closely approaches quackery.

There is no doubt that the use of the shotgun, stock mixed vaccine should be checked and the scientific use of bacterial vaccines encouraged. How may this be accomplished?

Physicians should realize more keenly than is generally the case that the intelligent individualizing use of vaccines requires definite recognition of the causative organism, that is, etiologic diagnosis; and that the claims of those who push the sale of irrational ready-made mixtures must be ignored utterly. It is humiliating that members of the medical profession should allow themselves to be influenced by the scientific jargon which the vaccine maker uses with an air of authority.

Manufacturers should be required to state on the label whether the product is experimental or of established value, and the federal law regulating the sale of serums, vaccines and similar products should be amended to give the Public Health Service authority to prevent interstate sale and shipment of worthless and possibly harmful biologic products, the burden of proof to be on the purveyor.

Those reputable manufacturers who attempt to do an honest business in spite of dishonest competition

should be upheld and supported. Unscrupulous manufacturers will then find unprofitable their attempts to foist on our profession non-potent, and in many cases harmful, products of this class.

To emphasize again, the use of the mixed stock vaccines of commerce is irrational because it is based on the conception that infections are caused by more than one kind of micro-organism; it is harmful because it encourages superficial examination, slipshod diagnosis and routine treatment without individualization; it is unnecessary because, when the physician desires to use more than one vaccine, he can inject them separately or mix them at the time of injection in such dosage as he chooses.

MAKING THE RIGHT START

For the student who has decided to study medicine the first and most important step is the selection of a medical school; a false step here may handicap him for life. Fortunately, as already stated,[1] never before has there been available so much reliable information to guide him.

Before choosing a medical school the student should obtain information on several important points: its requirements of preliminary education; the character of its teaching; whether or not its diplomas are recognized in all states, and the tuition fees charged.

Low entrance requirements by a medical school may attract some students. It is important, however, for the student to make sure that his preliminary education is sufficient to meet the requirements of the state licensing boards of the country. He should know that at the present time ten[2] state licensing boards require that before beginning the study of medicine the student must have completed two years of work in a college of liberal arts, in addition to a four-year high school education, and that the boards of eighteen other states[3] require at least one year of such preliminary college preparation. Although he may not at first be seeking a license in one of these twenty-eight states, he may later miss a great opportunity by being thus debarred. He should know also that all the better medical colleges[4] now require this higher preliminary education since — most important of all — the student needs it to grapple intelligently with the difficult and complex subjects of the modern medical course. Lower entrance requirements by any medical college, therefore, should be regarded as an indication that the medical training furnished will be correspondingly low.

A generation or two ago almost any medical course was adequate to cover the medical knowledge of the time. Not so at present. Modern medicine is based on scientific knowledge and without this knowledge the physician of the future will be a failure. Adequate instruction in medicine can now be given only by expert teachers, with well-equipped laboratories, and in connection with dispensaries and hospitals which provide an abundance of clinical material.

Formerly a course in almost any medical college furnished an adequate qualification for the license to practice medicine in all states. This has also been changed. At the present time state licensing boards are making more use of their power to discriminate between medical colleges and to refuse recognition to those which are deemed not properly qualified to furnish a training in modern medicine. Diplomas from those not recognized, therefore, do not constitute acceptable qualifications for the license to practice medicine in such states. The student must make sure not only that he has adequate preliminary education, but also that he has secured his medical training in a college which is recognized in all states.

The student is, of course, bound to consider the expense of his medical training, and herein lies the bait by which some inferior colleges which profess deep interest in "the poor boy" endeavor to attract students. If the training is not thorough and up to date, the student should know that the training furnished will be a mighty poor investment at any price. As a matter of fact, and as shown in the statistics published this week, the total fees charged by many of the best medical colleges, particularly the medical departments of some state universities, are lower than those charged by some of the poorly equipped proprietary institutions. In the same length of time, therefore, and often for even lower fees than he would pay in a poorly equipped institution, the student may acquire his education in one of the best medical colleges of the land. If some of the better schools do charge higher fees, they spend on each student per year several times the amount of money that the student pays for tuition. This they are able to do because of endowments or state aid. It would be poor economy, therefore, for one to enter a low-grade college which depends on students' fees alone for its income, when for a few additional dollars each year one can enter a thoroughly equipped institution and get a far better medical training. Even if one should be required to work one's way through, in whole or in part, the opportunities for doing so are usually greater in the better than in the lower standard colleges. As a rule, however, it is the student who works his way through who appreciates not only the value of money, but also the value of the medical course he is getting. It is not surprising, therefore, that many such students are found in the

1. Choice of a Medical School, editorial, THE JOURNAL A. M. A., Aug. 22, 1914, p. 690.
2. These states are Alabama, Colorado, Indiana, Iowa, Minnesota, New Hampshire, New Jersey, North Dakota, South Dakota and Wisconsin.
3. These states are Arkansas, California, Connecticut, Illinois, Kansas, Kentucky, Louisiana, Maryland, Michigan, Mississippi, Oklahoma, Pennsylvania, Rhode Island, Texas, Utah, Vermont, Virginia and Washington.
4. Listed on page 704.

high-grade medical colleges. As previously shown,[5] there are now about 170 free scholarships, as well as generous loan funds, available in the better medical colleges for deserving students.

How may the student secure reliable information on these matters? Some medical colleges advertise extensively in newspapers and popular magazines and through announcements and circulars containing glowing, if not misleading, statements. At present certain medical schools are being thus advertised, even though their diplomas are not recognized in from twenty-five to thirty-two states![6] It is hardly to be expected that the announcements sent out by these schools will contain the information which the prospective medical student needs. It is essential, therefore, that he should secure information from impartial and reliable sources, so as to make sure he is not enticed into a low-grade institution and find on graduation that his diploma has but limited value. To inform himself thoroughly, therefore, he should first secure the announcements of a number of colleges and study these. But, at the same time, he should secure reliable information from other sources. He should read the reports on medical colleges published from time to time in THE JOURNAL by the Council on Medical Education, which can be obtained in reprint form. After an extensive investigation the medical schools of the country have been rated by the Council in three classes, namely, A, B and C. If the student is otherwise in doubt, he will not make a mistake by choosing one of the colleges contained in the higher classification. If he has earned his diploma at a college in the higher classification which required for admission two or more years of college work, in addition to a four-year high school education, there is no doubt regarding either the quality of the training obtained or his eligibility after graduation to obtain a license in any state he may choose.

In his preliminary and medical education the student should bear in mind that he is laying the foundation for the rest of his life. If he finds that additional preliminary education is needed to enter one of the better medical colleges, he should consider the time well spent, since he is all the more sure of having laid a solid foundation. Although the medical profession in this country is overcrowded, there is always room for the thoroughly competent. On the other hand, disappointed indeed will he be if because of lower entrance requirements or other allurements he is induced to get his training in a poorly equipped college and finds after graduation that he is handicapped for life.

5. Scholarships in Medical Education and the "Poor Boy," Current Comment, THE JOURNAL A. M. A., Feb. 13, 1915, p. 597. This contains a list of the medical colleges which provide free scholarships.

6. For table showing in what states diplomas granted by the various medical colleges are not fully recognized, see THE JOURNAL A. M. A., April 24, 1915, p. 1412.

GASTRIN

The discovery by Bayliss and Starling, in 1902, of secretin, a specific chemical stimulant to pancreatic secretion, has been the starting point of much valuable investigation and not a little fruitful speculation in physiologic science. It furnished an example of the stimulation of one organ by a chemical product formed in another, and this led Starling to propose the general term "hormone" to designate substances which act thus at long distance by being transported in the circulation. Soon afterward Edkins, in 1906, expressed the belief in the existence of a comparable gastric secretagogue which he designated gastric secretin, or gastrin. This product was believed to be formed by the contact of certain substances with the pyloric mucous membrane, and to be carried, after absorption into the blood stream, to the gastric glands, stimulating them to secretion.

The main experimental facts on which these conclusions were based have since been substantiated by other workers. As yet no one has succeeded in preparing either secretin or gastrin in a form approaching chemical purity, and much of the controversy attached to the questions raised by these important discoveries has centered in the real specificity of the exciting substances isolated thus far. Tissue extracts are in general likely to furnish products capable of lowering arterial blood pressure. Accordingly, vasodilation has been held responsible by investigators here and there for the resulting secretory activity. If a common pressure-lowering tissue constituent were the sole factor involved in the striking phenomenon of an increased flow of gastric juice observed after injection of so-called gastrin extracts, one would expect a rather widespread distribution of the exciting agent. This appears not to be the case. According to the latest reports in this field,[1] the gastrin is not confined to one part of the stomach, as Edkins and others believed, but is uniformly distributed throughout the stomach mucosa. Gastrin is found in much smaller concentrations in the duodenum, and its presence can just be demonstrated in the esophagus. Preparations of other parts of the body — pancreas, submaxillary glands, smooth and striated muscle — are without special effect on gastric secretion.

Keeton and Koch[1] believe that gastrin causes a true gastric flow rather than a simple vasomotor response. This is a logical conclusion from the fact that an intramuscular dose of gastrin which causes a fall in blood pressure lasting over four or five minutes may excite a secretion of a duration of an hour and a half, with a maximum flow between thirty and forty-five minutes following the injection. These investigators further conclude that gastrin is of a chemical nature different from that of pancreatic secretin, and that it

1. Keeton, R. W., and Koch, F. C.: The Distribution of Gastrin in the Body, Am. Jour. Physiol., 1915, xxxvii, 481.

is a specific substance. Lest the therapeutist become unduly impatient, it may be added that immediately practical possibilities arising out of these findings have not yet been developed.

Current Comment

TRAINING OF MEDICAL MISSIONARIES

Inquiries have come to THE JOURNAL from time to time requesting information regarding medical schools which "will give condensed courses in medical training such as will furnish sufficient medical knowledge for a foreign missionary." These inquirers have usually urged that there is "not time for a full and complete medical course," and that since they are going to practice among the heathen, a thorough medical training does not appear essential. It is an encouraging contrast, therefore, to note that the fourth report of the Board of Missionary Preparation, just received, urges that those intending to take up the work of medical missionaries "should be fully prepared according to the highest medical standards" — "should be graduates of medicine from some first-class medical college." The soundness of this advice is clear. The farther a physician goes from medical societies and medical institutions, the more he must depend on his own knowledge and resources. For that reason, instead of securing a smattering of medical knowledge, a thorough medical training becomes all the more important. The majority of graduates of low-grade medical colleges stay in the larger cities, where, if they get into a tight place, they can transfer their responsibility to others. The medical missionary who goes where few physicians are found needs the most thorough training possible. All the more reason, therefore, why he should have been taught by the best teachers, in colleges with the best-equipped laboratories, and where he has had an opportunity to observe all forms of disease at the bedside, in dispensaries and in hospitals. If he is conscientious in the work he has undertaken — and his calling implies that — he will naturally desire to have the training which will enable him to render the greatest service to the portion of humanity in his charge, from both the physical and moral standpoints.

THE HOSPITAL INTERN YEAR

An article by Dr. Ewing, in this week's issue,[1] should be read by those who are interested in the development of the medical curriculum. Dr. Ewing deals with the subject from the broad standpoint of the effect of the hospital intern year on the medical curriculum; but the importance of the hospital internship to the public should not be forgotten. Investigation shows there are enough fairly good hospitals to provide internships for all medical graduates, and that from 75 to 90 per cent. of all graduates voluntarily take such hospital service. These graduates naturally look for the best hospitals. Hospitals, also, need interns, and naturally prefer the graduates of the better medical colleges. It is claimed that some hospitals are not conducted in such a manner as to give the intern a satisfactory training. This is doubtless true, and it is a matter which needs correcting. On the other hand, the hospitals claim that graduates of some colleges are not adequately trained to make satisfactory interns. This is also true, and is rapidly being corrected. As medical colleges turn out better-trained men, hospitals will be able to obtain better interns, who, in turn, will help to improve the hospitals. The standards of some hospitals may, indeed, have a depressing effect on the intern; but if the student has any strength of character, instead of this relationship resulting in a lowering of his ideals, it will result in improved conditions in the hospital. Instances could be given, in fact, in which the routine in hospitals has been revolutionized and the efficiency of the service enormously increased through the influence of well-educated interns. It is conceded that he who completes an internship in a good hospital makes a better and safer practitioner than he who goes directly into practice without that training. In the former case he learns to apply his medical knowledge while he is under the supervision of the hospital staff, and benefits from his acquaintance with the hospital routine and the methods of treatment employed. Since there are enough hospitals to provide internships for all graduates, and since so large a majority of graduates already obtain these internships, the question of greatest importance, apparently, is how to improve both hospitals and colleges to make these internships of greater value, not only to the intern and to the hospital, but also — ultimately — to the public.

1. Ewing, James: The Hospital Intern Year as a Requirement for Medical Licensure, THE JOURNAL A. M. A., this issue, p. 670.

THE WORKING OF THE LEAVEN

Under the title, "Medicine Man Quits With $1,000,000," the Brazil (Ind.) *News* for August 5 prints a news item that will interest many JOURNAL readers. Here it is:

"KOKOMO, *August 5.*—The Cora B. Miller Medicine Company, known over the country because of its extensive magazine advertisements of a cure for the complaints of women, today discharged its small army of stenographers and other employees and then closed its doors to business. The closing came as the result of a fraud order issued recently by the Postoffice Department, which denied the use of the mails to the circular advertising matter of the company.

"According to Dr. Frank Miller, who started the business twenty-five years ago, when he was practically penniless, the company will never again do business. Miller is now worth from $900,000 to $1,000,000.

"For the first twenty years of the business, there was no interruption, and the money poured into the coffers of the company from women of the country. Four years ago, however, the government took exception to the use of the name Cora B. Miller in connection with the advertising, inasmuch as Mrs. Miller had no connection with the company, and the firm was forced to change names.

"The change marked a turning point in the affairs of the company, and when recently the government brought a fraud order against the company, Miller decided to quit the business. Miller is the largest holder of real estate in Kokomo."

Readers of THE JOURNAL will remember the Cora B. Miller fraud which was exposed in the Propaganda

department July 23, 1910, and the matter reprinted and widely circulated in pamphlet form.[1] The newspaper quoted above credits the failure of the Miller concern to the fact that the federal authorities caused it to change its name from "Mrs. Cora B. Miller" to "Miller Medicine Company." That this change probably had something to do with the decline of the business is doubtless true. Another agency, however, has been at work, and tended to make the Miller fraud less profitable. A good many thousand reprints of THE JOURNAL'S exposé have been circulated. The public generally, and especially the feminine part of it, has been wholesomely awakened to the wretched swindles that have been, and still are, perpetrated on it by "patent medicine" fakers. The American Medical Association, therefore, may certainly take some of the credit for bringing about the consummation that resulted in Miller retiring from his fraudulent trade. And here we have one more explanation of the fact that certain individuals froth at the mouth whenever the American Medical Association and THE JOURNAL are mentioned.

PERTUSSIS AND VACCINATION

A word of commendation should be accorded the New York Department of Health for its appeal to the physicians of New York for their collaboration in the more extensive use of vaccine in the treatment of pertussis. This disease, "which kills yearly ten thousand American children," occupies a unique position among the infectious diseases, in that its onset is indefinite, its duration particularly long, and its seriousness not at all appreciated by the public. The basis for this appeal is in the favorable results in the prophylactic use of the vaccine already reported. It would be well if the collaboration were given still wider scope and were extended to other large municipalities so that we could determine without undue delay the possibility of reducing the morbidity and mortality of this disease.

1. This now appears in the pamphlet "Female Weakness Cures and Allied Frauds," price 10 cents.

Attacking the "Patent Medicine" Citadel of Secrecy.—The Bulletin of the New York City Department of Health says: The Louisiana State Board of Health has adopted verbatim the ordinance enacted by the Board of Health of The City of New York in December last, regulating the sale of proprietary and patent medicines. This ordinance, as our readers will recall, will become effective in New York City on December 31, 1915. It requires either the registration of the names of ingredients of all proprietary or patent medicines with the board of health, or, in lieu thereof, the printing of the name of each ingredient "conspicuously, clearly and legibly in English, on the outside of each bottle, box or package in which the medicine or medicinal compound is held, offered for sale, sold or given away." We are advised that the City of Cincinnati has under consideration the enactment of this same ordinance, and that similar legislation is being considered in Indiana, Minnesota and other Western states. We are hopeful that in due time New York city's ordinance will become effective throughout the country through the action of the respective local authorities, and will thus have all the force and effect of a national law. The real need of the country is national legislation on this subject; but in the absence of national legislation, it is gratifying to know what progress can be made by means of local legislation.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Colored Physicians Organize.—The Southwestern Arkansas Society of Colored Physicians, Dentists and Pharmacists was organized at Hope, July 14, and the following officers were elected: president, Dr. J. E. Swayze, Arkadelphia; vice president, Dr. Isaac B. Jordan, Hope; secretary, Dr. George A. Forde, Malvern, and treasurer, Dr. W. E. Thompson, Ph.G., Hope.

Personal.—Dr. Steven W. Harrison, Fort Smith, formerly president of the Arkansas State Medical Association of Physicians, Dentists and Pharmacists, has been elected delegate to the National Medical Association, Chicago.——Dr. W. O. Clark, Pine Bluff, has closed the Clark Sanitarium for three weeks and will do postgraduate work in Chicago and Rochester.

GEORGIA

Hospital Notes.—A commission to govern the Macon Hospital was elected at a meeting of the common council, June 29, but the plan for a joint city and county hospital has been abandoned.——The Atlanta Physicians' Club, at a special meeting, July 21, unanimously endorsed the proposed bond issue of $500,000 for improvements at the Grady Hospital. The resolutions adopted provided that the hospitals be maintained solely as a charitable institution and the pay wards be abolished. The Fulton County Medical Society at its meeting, July 15, also went on record as favoring the bond issue.——Dr. Robert M. and William P. Harbin, Rome, have applied for a charter for the incorporation of the Harbin Hospital with a capital stock of $20,000 with the privilege of increasing to $100,000.

ILLINOIS

Field Hospital Goes to Camp.—The Field Hospital No. 1, Illinois National Guard, under the command of Major William J. Swift, M. C., left for Camp McCoy, Sparta, Wis., August 12. They will remain in camp twelve days and will be under the instruction of Major William W. Reno, M. C., U. S. Army, commanding Field Hospital, Company and Ambulance Company No. 1.

Sanatorium Bids Authorized.—At a meeting of the Rock Island City Council, July 28, plans and specifications for the Rock Island Municipal Tuberculosis Sanatorium were submitted by the architect and accepted. The building is to cost about $25,000 and will be of brick structure, of cottage style of architecture and will have accommodation for thirty-two patients.

Rules Governing Contagious Diseases.—The State Board of Health has published a series of pamphlets showing the officially adopted rules for the control of contagious diseases, as in force on and after February 16. These include "general rules for the control of communicable diseases;" "scarlet fever," "whooping cough," "typhoid fever and typhoid carriers," "smallpox," "measles," "chicken-pox," and "diphtheria."

Civil Service Examinations.—An examination will be held on September 2, by the Cook County Civil Service Commission at Room 547, County Court House, for the position of resident physician at the Psychopathic Hospital. The pay is $100 a month and maintenance and the resident physician is required to live at the institution, and is held responsible for the medical treatment of the inmates and the enforcement of the rules of the institution under the supervision of the county physician.

Illinois at the Mississippi Valley Tuberculosis Conference.—At the request of the governor of Indiana, Governor Dunne has appointed twenty-five delegates to represent Illinois at the Mississippi Valley Tuberculosis Conference which will be held at Indianapolis from September 29 to October 1. This conference, consisting of delegates appointed by the governors of the entire central section of the United States, devotes itself to the discussion of the practical problems of the warfare against tuberculosis and outlines the methods to be employed in the various states.

Chicago

Sachs to Be Reappointed.—Apparently authoritative word from the city hall states that Mayor Thompson will reappoint Dr. Theodore B. Sachs, head of the Municipal Tuberculosis Sanatorium.

Personal.—Dr. Frank W. Lynch, assistant professor of obstetrics in Rush Medical College, has been made professor of gynecology and obstetrics and head of the department, in the University of California, and will leave to take up his new duties September 1.

INDIANA

Infant Welfare Dispensaries Opened.—The City Board of Health, Indianapolis, in order to decrease the infant mortality during the summer has opened up six welfare dispensaries at which the proper methods of caring for children will be demonstrated. The Children's Aid Association will distribute pure milk. During the first six months of the school-nursing system, nine school nurses have been employed and more than four thousand calls have been made to the homes of schoolchildren.

Charges Against Elwood Physician.—Dr. John F. Spaunhurst, Indianapolis, a member of the State Board of Medical Registration, is said to have filed two affidavits in the circuit court charging Fred H. Prechtel, a chiropractor of Elwood, with practicing medicine without a license. It is claimed in the charges that Prechtel is not a registered physician. The penalty prescribed for violation of the medical registration law is a fine of not less than $25 and not more than $200.

Investigation of Mental Deficiency.—The governor has appointed a commission to investigate the causes and prevention of mental deficiency in the state. The medical members of the commission are Drs. George F. Edenharter, superintendent of the Central Indiana State Hospital, Indianapolis; Samuel E. Smith, superintendent of the Eastern Indiana State Hospital, Richmond; Charles P. Emerson, dean of the Indiana University School of Medicine, Indianapolis; Walter C. Van Nuys, superintendent of the Indiana Village for Epileptics, Newcastle; and Dr. George S. Bliss, superintendent of the State School for Feeble-Minded Youths, Fort Wayne.

IOWA

State Health Exhibit.—The State Board of Health is planning a state health exhibit to be sent around the state in a special car similar to that of the Louisiana Board of Health.

Personal.—Dr. Walter L. Bierring, Des Moines, president of the Iowa State Board of Health, succeeds Dr. Otto V. Huffman as secretary-treasurer of the Federation of State Medical Boards and will be the editor of the federation's *Monthly Bulletin*.

Hospital Notes.—Professional and business men of Marengo are arranging for the establishment of a city hospital in that city. A site has been located and plans and specifications have been prepared.——Capt. W. M. Greeley announces that he will build a hospital in Ames as a memorial to his wife, the late Mary Greeley.

MICHIGAN

Leper in Glenwood.—John C. Hopper, a farm laborer living near Glenwood, has been found to be suffering from leprosy.

The Care of Babies.—The July issue of *Public Health*, the official publication of the Michigan State Board of Health, is devoted almost entirely to the care of babies and children.

Tuberculosis Day.—August 20 was named by the governor as Tuberculosis Day, on which he requested that all physicians of the state give free medical examination to all who were suspected of being afflicted with tuberculosis. The medical societies and the medical profession at large lent their cooperation.

Free Treatment of State Crippled.—During the last year more than 700 children have been treated free of charge at the University Hospital, Ann Arbor, under the state law of 1913, which provides for the medical and surgical treatment of children afflicted with curable maladies or deformities, whose parents are unable to provide proper care or treatment.

Antituberculosis Convention.—The annual meeting of the Michigan Society for the Relief and Prevention of Tuberculosis will be held in Grand Rapids, September 2 to 4. Dr. Victor C. Vaughan, dean of the Medical School of the University of Michigan, will deliver an address on "Campaigns on Tuberculosis in Michigan" and will discuss the best method of using the $100,000 appropriated by the legislature for the suppression of tuberculosis in the state.

Personal.—Dr. Ralph C. Apted, city physician of Grand Rapids, is still under treatment in the Augustana Hospital, Chicago, and is reported to be improving rapidly.——Dr. Walter C. Lambert, Wyandotte, in an effort to avoid a collision with a motor cycle, lost control of his automobile, which crashed into a tree throwing Dr. Lambert out, fracturing his jaw and causing serious injuries to the chest. ——Dr. Ferris N. Smith, Grand Rapids, sustained a badly lacerated ear August 31, by the overturning of his automobile near Ionia.——The governor is said to have demanded the resignation of Dr. David L. Trear, Adrian, a member of the Board of Control of the State Public School, Coldwater.——The city council of Negaunee has appointed Dr. Carl J. Larson full-time health officer.—— Dr. Robert M. Gubbins, Ceresco, is said to be in a critical condition at the Battle Creek Sanatorium following an operation for the removal of gallstones.——Dr. Orson Millard has been appointed a member of the Flint Hospital board.——Dr. Calvin R. Elwood, Menominee, returned home July 5, after a trip to New York for consultation regarding his eyes.——Dr. Pierce O. Wagener, Harbor Beach, was seriously injured in a railway accident at Rock Falls, August 6.——Dr. Harry A. Haze, Lansing, has been appointed a member of the Board of Control of the State Public School, Coldwater.

MINNESOTA

New Hospitals.—Construction work on the Government Hospital for the Indians on the Fond du Lac reservation near Cloquet began July 31.——A house has been purchased in Lake City which will be remodeled and used as a hospital.

Directory of Tuberculosis Houses.—The health department of Minneapolis announces that it has prepared a list of houses in which tuberculosis patients have lived. This plan is commended as affording greater protection to public health.

Dispensary to Move.—As soon as the alterations to Millard Hall, the central building of the Minnesota Medical College, have been completed, the university will remove its free dispensary from Seven Corners, Minneapolis, to the Hall and thereby make the services of the dispensary more available to patients from the Twin Cities.

NEW JERSEY

Personal.—Dr. Edward Guion, for twelve years chief health officer of Atlantic City, has resigned, his resignation taking effect August 1.——Dr. John W. Wade, president of the Millville Board of Health, is ill and has been taken to a Philadelphia hospital for operation.

Vaccination Law Held Mandatory.—Based on the theory that to give a board of education a prerogative in the matter of adjudging the efficacy of vaccination as a preventive of smallpox vouchsafed to no other public body in the world outside of state legislatures, Commissioner James G. Enright, Jersey City, of the State Department of Public Instruction, August 3, dismissed the appeal of Clarence S. Curtis, whose son was excluded from the public schools of that city because of his refusal to permit the boy to be vaccinated. Mr. Curtis is opposed to theory and practice of vaccination and wanted the local authorities to give him a hearing. As the statute is mandatory, Commissioner Enright pointed out that the contention of Mr. Curtis could not be entertained.

NEW YORK

Huffman Moves to Brooklyn.—Dr. Otto V. Huffman, formerly secretary of the New York State Board of Medical Examiners and secretary-treasurer of the Federation of State Medical Boards, has moved from Albany to Brooklyn. Dr. Huffman has accepted the lectureship on physical diagnosis at Long Island College Hospital, and will serve as secretary and executive head of the college faculty. No successor to the position left vacant at Albany has been appointed.

Plans for Rochester Health Conference.—The *Monthly Bulletin* of the New York State Department of Health announces that plans are being carried forward for a Health Conference in Rochester September 6 to 10 which it is

believed will be a notable public health convention. Organizations which will cooperate are the American Public Health Association, the New York State Department of Health, the New York State Sanitary Officers Association and the Rochester Public Health Association.

State to Keep Hospital Commission.—The proposed amendment continuing the present State Hospital Commission as a constitutional body in control of the administrative and financial operations of the state hospitals for the insane which has been before the committee on charities of the constitutional convention has been reported favorably. The committee is opposed to proposals for a board of control for all the institutions of the state. In his report to the convention, Chairman Wadsworth pointed out that the hospital commission looks after 33,000 patients in fourteen hospitals, with 6,000 employees and 200 medical officers, at a cost of $8,500,000 a year. It is stated that this is the largest undertaking of a medical and curative nature maintained by any government in the world and that at the present rate of increase when the next constitutional convention meets the number of insane in the state will have reached 60,000 and the number of employees, 10,000.

Labor Unions Cooperating with Public Health Campaign.—Last April Health Commissioner Hermann M. Biggs sent out a letter to some of the principal labor unions of the state offering the services of the department lecturers to speak before labor union meetings on health topics, particularly tuberculosis, and asking the unions to cooperate by appointing health committees to aid in the general and local health campaign. A special circular was prepared dealing with the problem of industrial tuberculosis and the weekly *Health Hints* service of the department has been offered to the principal labor papers of the state. These steps have met with a gratifying response from the leaders of labor unions and a considerable number of meetings have been arranged. A number of the labor union papers have expressed their interest in the *Health Hints* service and will use them when possible. The Joint Board of Sanitary Control of New York City has ordered 10,000 copies of the special circular on industrial tuberculosis for use among the members of the cloak, suit, skirt, dress and waist industries.

New York City

Personal.—Dr. Daniel A. Sinclair and Dr. Joseph B. Bissell have returned from England.——Dr. George E. Brewer has returned from France, where he has been giving his services in hospital work among the wounded.——Dr. Andrew J. Gilmour in company with Professor Helvey successfully scaled Mount Geike, one of the most precipitous peaks in the Selkirk range, on August 12.

Gifts and Bequests.—After some litigation it has been decided that the Knickerbocker Hospital is entitled to $580,000 from the estate of Mrs. Mary R. Wright. The hospital was formerly known as the J. Hood Wright Hospital, the name having been changed to attract support from other sources since the Wright estate was insufficient to meet the growing needs of the institution.

Ward for Accident Cases.—The managers of the Norwegian Hospital, Brooklyn, have arranged for the construction of a $10,000 ward for the care of accident cases. This step has been taken because of the increase in accident cases in the industrial section of Brooklyn where the hospital is located. Since the industrial concerns in the neighborhood will receive the chief benefit from such a ward the managers are organizing a fund to which these concerns will be asked to contribute.

Health Talks in Stores.—The directors of the Retail Drygoods Association have voted to establish a committee on health and sanitation to cooperate with the department of health in protecting the health of the 50,000 employees of the retail drygoods stores in this city. The owners of large department stores are planning to secure the best working conditions for those in their employ. The Bureau of Public Health Education, under the direction of Dr. Charles F. Bolduan, will establish a course of lectures and a publicity campaign for the purpose of teaching employees how to be healthy and sanitary.

NORTH CAROLINA

Hospital Chartered.—The secretary of the state has issued a charter to the Mary Elizabeth Hospital Company, Raleigh, with an authorized capital stock of $25,000.

Traveling Health Exhibit.—The entire public health exhibit of the North Carolina State Board of Health, will be shown at the various county fairs in central North Carolina and also at the State Fair, Raleigh.

Vaccination for Typhoid in Durham.—Dr. Archibald Cheatham, health officer of Durham, reports 4,263 inoculations for typhoid fever. The county will soon establish a laboratory for the joint use of Durham and Durham County.

Personal.—Dr. C. DeWitt Colby, Asheville, sustained painful injuries in an automobile accident last week.——Dr. Hugh W. McCain, High Point, has acquired the interest of Dr. Guy F. Duncan in the High Point Hospital and has associated with him Dr. John T. Burrus in the management of the institution.

Anonymous Infants.—A recent checking of the records of the State Board of Health shows that not less than 72,000 births have been recorded without the name of the child having been given. The board therefore, requests practitioners to make a special effort to impress on parents the importance of having the name ready when the time for filing the certificate comes, in order that the vital statistics records may be complete.

Sanitary Prison Camps.—The last bulletin of the State Board of Health, reporting the findings of a recent inspection of ten of the convicts camps of the state, says that of these ten camps, six did not have sufficient air; only three were not infected with bed bugs; three were without furniture; in three the convicts had no night shirts; in eight two sheets were not provided and in five, no towels were provided. In two camps all the prisoners had been vaccinated against smallpox and typhoid fever and in two there were tuberculosis patients in the camp. The rating of the camps showed that the best camps scored only 77 points while the worst scored 39.3 points, the average being 56. As the result of this inspection, bimonthly inspections are to be made by the State Board of Health and score charts will be kept from which the rating of the camps will be computed.

OHIO

Society Reorganized.—The Monroe County Medical Society, at a meeting held in Woodsfield, July 2, reorganized electing Dr. Alexander H. Korner, Woodsfield, president; and Dr. William E. Thompson, Antioch, secretary-treasurer.

Research Work in Tuberculosis.—Dr. Robert H. Bishop, Jr., chief of the Cleveland Bureau of Tuberculosis, has arranged for the establishment of a laboratory at the Warrensville Sanatorium, at which research work may be carried out.

Patients Transferred to Lima.—Dr. Charles H. Clark, superintendent of the State Hospital for the Criminal Insane, Lima, has already received 300 patients and announces that he can take care of 100 additional each week until 1,000 have been transferred.

Health Campaign.—The State Board of Health is making an aggressive educational campaign this summer against preventable diseases. Dr. R. G. Patterson, director of the division on public health education and tuberculosis, has arranged to show the state exhibit at a number of county fairs from August 10 to October 5, staying a week at each place and at the State Fair.

Nonmedical Healers Must Be Licensed.—The Platt-Ellis Bill became operative August 1. This bill provides for the registration of all nonmedical healers including chiropodists, chiropractors, masseurs, and those who practice spondylotherapy, neurotherapy, naprapathy, hydrotherapy, psychotherapy, and other nonmedical cults. The new law does not affect osteopaths or Christian Scientists.

Personal.—Dr. Shelby Mumaugh, Lima, sustained a compound fracture of the right leg and injuries to the left arm in a collision between the automobile in which he was riding and a Pennsylvania train, three miles west of Lima, August 1.——Dr. Charles W. Wendelken, for three and one-half years city physician of Portsmouth, has resigned to take effect August 2.——Dr. Paul D. Epsey, Fort William, has purchased the Whitehead Hospital, Xenia, and will take charge of the institution this month.——Dr. Benjamin P. Hall, Richwood, is ill with gallstone disease in the Grant Hospital, Columbus.

PENNSYLVANIA

Personal.—Dr. Harry A. Briney, Pittsburgh, received slight injuries in an automobile collision August 6.——Dr. George W. Dreher, Shamokin, is convalescent after a long period of illness.

Soft Drink Manufacturers Arrested.—The increasing demands for nonalcoholic drinks during the hot weather has increased the number of adulterated soft drinks and thirty-five arrests were made because of saccharin additions to the drinks during the month of July. Most of these prosecutions were brought in Philadelphia, Lancaster, Beaver, Dauphin and York counties.

Federal Investigation of Occupational Diseases.—The federal government has opened offices and laboratories for the investigation and study of occupational diseases in the Pittsburgh district. Dr. Joseph W. Schereschewsky of the Public Health Service has been placed in charge and has removed with his family to Pittsburgh. Headquarters will be at the Marine Hospital, where rooms are being fitted up. There will be four laboratories, the chemical, physiologic, bacteriologic and physical. This new Public Health Service station will have also, five assistants, who will take up the study of fatigue, and its relation to temperature and humidity in the mills and workshops of the Pittsburgh district.

SOUTH CAROLINA

Sanatorium Opened.—The Greenville County Sanatorium for Tuberculosis near Piney Mountain was formally opened August 4. The principal address was delivered by Dr. James A. Hayne, Columbia, secretary of the South Carolina Board of Health.

Sanitary Survey of Capital.—Application has been filed by Dr. S. Koffowe B. Fishburne, health officer of Columbia, with the State Board of Health, that a sanitary survey of Columbia be made as soon as possible by the United States Public Health Service.

Hospital News.—Rev. Lewis J. Bristow, Abbeville, has resigned to become superintendent of the South Carolina Baptist Hospital, Columbia. Mr. Bristow is responsible for the establishment of this hospital.—Excavation, preparatory to the erection of St. Mary's Hospital, North Anderson, was commenced July 28.

Pellagra in Orphanage.—Of the 250 children at the Epworth Orphanage, Columbia, between 75 and 100 are said to be afflicted with pellagra. To combat this disease, the board of trustees have asked the cooperation of the United States Public Health Service, and Surgeon Joseph Goldberger has been assigned to take charge of the cases and to direct the diet and medical treatment of the patients.

State Hospital Policy.—The Board of Regents of the State Hospital for the Insane, at its meeting July 29, fixed its policy regarding the liability for the support of inmates of the institution. When the inmate has any estate or income, he is to be regarded as liable for his support; a father is to be liable for the support of his minor child and the husband for the support of his wife. When relatives of inmates are financially able to contribute to their support, it is the policy of the board to attempt to induce such relatives to assume in whole or in part the support. The board fixed $250 as the annual amount required for the support and treatment of a patient.

TEXAS

Library Installed.—A medical library of about 1,000 volumes has been installed in the new quarters of the Bexar County Medical Society in the Bedell Building, San Antonio, and a large number of medical journals have also been ordered.

Pellagra Day.—August 6 was known as Pellagra Day in Dallas County. The County Medical Society devoted its meeting to the discussion of the history and treatment of the disease, and pellagra clinics were held at Baylor Medical College in the afternoon.

State Medical Association Office Moves.—On account of the urgent need of larger quarters, the office of the State Medical Association of Texas has been moved from the basement of the Western National Bank Building, Fort Worth, to a four-room suite on the sixth floor of the building.

Hospital Notes.—It is stated that John Sealy contemplates the expenditure of $80,000 in the near future on improvements and additions for the John Sealy Hospital. The changes include an additional story for each wing of the building and enlargement of the clinical facilities.——Bids for the erection of the Robert Green Memorial Hospital, a joint hospital for San Antonio and Bexar Counties, were opened August 20.——Contracts were let July 22 for the erection of a new east wing to St. Paul's Sanitarium, Dallas, to cost $200,000.——Presbyterians of Texas are planning to erect a new sanitarium building just north of the present Austin Sanitarium to cost $100,000.

Personal.—Dr. John M. F. Gill, Cameron, has been appointed physician to the Confederate Home, Texas, succeeding Dr. T. F. Moore.——Dr. John S. Turner, Dallas, has been appointed a member of the State Board of Health, succeeding Dr. John O. McReynolds, Dallas, resigned.——Dr. John B. Baldwin, Marshall, has been appointed chief surgeon of the Marshall and East Texas Railway, succeeding Dr. James H. Taylor, deceased.——Dr. Jefferson D. Yates, Orange, fell from his automobile recently, fracturing his right forearm.——Dr. Joseph C. Henderson, Waelder, fractured his forearm while trying to crank his automobile, recently.——Fire destroyed the residence of Dr. Thomas K. Proctor, San Angelo, July 9, with a loss of $5,000.

Agreement in Health Problems.—At a conference held July 31, between representatives of the State Health Department, the United States Public Health Service, and the shipping interests of Galveston, the following agreements were reached:

That the federal health officers will board ships from foreign ports first, pending the answer to a request made of the secretary of the treasury, asking that the order be rescinded, which recently notified the state health officer that he would not be allowed on board vessels until the completion of inspection by the federal officers.

That the two health departments will act together in their treatment of health problems as they are presented by the incoming ships.

That when fumigation is necessary both departments will aid in the work, but the fee of $50 for the work will go to the state.

That two certificates of health will be issued, one signed by the federal and one by the state officer, when a vessel has passed inspection, and that both will be honored by the collector.

That neither side will surrender any of its rights by the agreement, which will be in effect until the representatives of the attorney general's department and of the United States district attorney's department have the opportunity to investigate the legal status of the problem.

UTAH

Utah After Unlicensed Practitioners.—The State Medical Board of Utah is apparently conducting a campaign against unlicensed practitioners. The arrest is reported of one F. J. Schultz, a chiropractor, of a Japanese "divine healer," of a Chinese "doctor" named E. Foo Lun, said to have had offices in both Salt Lake City and Denver, and also of a Dr. Healy who was said to be conducting a free show and incidentally selling medicine.

VIRGINIA

Personal.—Dr. J. Wilton Hope, Hampton, who has served Elizabeth City and county as health officer for ten years, has been reappointed for another term by the State Board of Health.——Dr. J. Warren Knepp, Roanoke, has been commissioned first lieutenant, M. C., Va. Vols., and assigned to the Company at Roanoke.—Dr. Jeffrey N. Ellder, Richmond, has been appointed medical director of the Hopewell Hospital, Hopewell.

Inter-Hospital Conference.—The second semiannual meeting of the Inter-Hospital Medical Conference, whose membership consists of superintendents and assistants of the Virginia hospitals for the Insane and the Epileptic Colony, was held at the Central State Hospital, Petersburg, last month. The members propose to organize a state society for mental hygiene, the purposes of which are, the conservation of mental health, the prevention of mental diseases and mental deficiency, and improvement in the care and treatment of those suffering from mental defects. The next meeting will be held at the Southwestern Hospital, Marion.

WEST VIRGINIA

Personal.—Dr. Colin R. Weirich, Wellsburg, has been placed in charge of the department of preventable diseases of the State Board of Health and Dr. Melvin P. Malcolm, Lewiston, has been made chief of the pure food and drug department.——Dr. Andrew L. Coyle, Wheeling, is reported to be held in Toronto, Ont., as a Germany spy.——Dr. Samuel L. Jepson, state health commissioner, has transferred his office from Wheeling to Charleston where he has quarters on the second floor of the Capitol Building.

CANADA

Personal.—Dr. U. J. Lalonde, Quebec, has been elected one of the high trustees of the Catholic Order of Foresters.——Lieut. Harry W. Paddell, Canadian A. M. C., Swift Current, Sask., has been appointed medical officer of the Tenth Canadian Mounted Rifle Regiment Overseas Force.——

Dr. William A. Henderson, Sarnia, Ont., has been given a commission in the Royal Army Medical Corps and has started for the front.

Canadians Drinking and Smoking Less.—There were nearly 800,000 gallons of spirits less drunk in the past fiscal year than in the previous year; 48,000,000 fewer cigars, and 27,000,000 fewer cigarettes were smoked. For the previous twenty years the nation's drink and tobacco bill had been steadily increasing. Of cigars there were consumed 236,866,542; cigarettes, 1,089,156,606, and of spirits, 4,072,187 gallons as compared with 4,831,116 gallons for the preceding six months. The per capita consumption of spirits was 1.872 gallons as compared with 1.116 in 1913-1914. This is lower than at any time since 1903. The per capita consumption of beer last year was 6.071 gallons as compared with 7.200 gallons in 1913-1914.

FOREIGN

New Sanatorium for the Philippines.—The president of the Philippine Antituberculosis Society has been authorized to enter into a contract for the construction of a sanatorium for the society. The Balic-Balic site has been selected as the most advantageous and desirable for the erection of the building.

American Bequest to Roman Hospitals.—According to the will of the widow of the prince of Vicovaro, her entire property is bequeathed to the clinics connected with the University of Rome. She was Eleanor Spencer of New York, and since she has been a widow has made her home in that city.

Memorial to Reil.—Johann C. Reil, the anatomist, began his career as professor at Halle, and a memorial to him was recently unveiled at that place. It stands in front of the university clinic, the seat of his labors until called to Berlin in 1810. He died in 1813, aged 55. The *Medizinische Klinik* states that he succumbed to typhus acquired in a field hospital.

Infant Welfare Circulars.—The Auguste Viktoria institution of Berlin has just issued three circulars for free distribution, one on the prevention of summer mortality among babies, one on infant feeding, and one on guarding infants and young children against infection, etc. The circulars can be obtained at local drug stores, and they are supplied directly to factories and stores on demand.

Prizes for Improved Orthopedic Appliances.—The city of Magdeburg has offered three prizes, from $125 to $750, for improved artificial limbs or substitutes for limbs, or devices to aid cripples at work or at the table, etc. Seven lines are specified along which improvement is sought. One is for a device to take the place of the thumb and two fingers after amputation of part of the arm. The criterion for this is that the man shall be able to work with a file and then let go of it. According to the *Medizinische Klinik* the prize lists close October 1.

Preventive Red Cross Work in Belgium.—Professor Pannwitz of Berlin has charge of the sanitary work in Belgium, and is said to be now issuing a journal, the *Offizielle Zeitschrift des belgischen Roten Kreuzes*, which is published in German, French and Flemish. It describes the aims and work of the Red Cross in war and in peace and especially the work in Belgium. Graf Trachenberg is chief of the Red Cross service there, and has founded at Brussels a dispensary and consultation station for children, for persons with pulmonary affections and for the unemployed.

Advertisers Fined for Exaggerated Claims.—The court at Leipzig recently imposed fines on several persons connected with the advertising of a book called "Häusliche Hilfe," an ordinary household medical guide. The fines were imposed for an advertising circular sent out commending the book as a guide with the aid of which one could cure himself of every possible disease by means of water, herbs and domestic remedies. The court said that the advice given in the book was good, perhaps, but by no means adapted to render the services of a physician unnecessary or to cure all diseases, such as those of the heart and lungs.

Triumph of Antimalaria Work in Italy.—The railroads in Italy are the property of and managed by the state, and the station agents and other employees in the regions infested with malaria always paid a heavy tribute to the disease. During the years 1885 to 1901, on an average each year, 69.92 per cent. of the railroad employees in the malarial districts contracted the disease. In 1906 a vigorous screening campaign was inaugurated and the proportion dropped to 24.65 per cent. This number has been constantly growing less since, until during 1914 only 6.03 per cent. of the employees living in the hotbeds of malaria or working there had malaria and they lost only an average of 1.01 days from work.

Deaths in the Profession Abroad.—C. Rahts of Berlin, long a member of the German imperial board of health, aged 64. He had charge of the records of causes of death and statistics of public sanatoriums.——E. Gagnoni, professor of pediatrics at the University of Siena.——O. Bondy, privatdocent of gynecology and obstetrics at the University of Breslau.——S. Stern, for many years professor of clinical propadeutics at the University of Vienna, aged 84.——H. Hertz, formerly professor of medicine at the University of Amsterdam, died at Weimar, aged 84.——C. A. Siecke, assistant at the laboratory for applied chemistry at the University of Leipzig.——San.-Rat Böttcher, collaborator on the *Deutsche medizinische Wochenschrift*, and Geheimrat Proskauer of Berlin, aged 64.

WAR NOTES

Hot Oxygen for Gangrene.—It is reported that the use of superheated oxygen for the treatment of gangrene has been used with success in the Paris military hospitals. Oxygen is said to be better than hot air to dry and sterilize moist gangrene and to act more quickly.

The Care of Returning Soldiers.—The new South Wales branch of the British Medical Association has offered to organize a voluntary medical service to look after all the wounded and sick soldiers. In South Australia, a military hospital of 250 beds is to be organized and a second hospital for convalescents of a similar capacity at Torrneis Park, near Adelaide.

Typhus Checked.—The American Minister at Bucharest, Roumania, in a cablegram dated July 26, to the American Red Cross, says that during his inspection of the country, he visited 75 per cent. of all the Serbian hospitals, and found no new cases of typhus. The malady appears to be entirely checked, but the physicians say that it may appear again in September.

Character of Wounds at Dardanelles.—According to W. A. Chapple in the *British Medical Journal*, the surgeon of a French hospital ship in the Dardanelles reports that the wounds received by the soldiers in the Dardanelles differ from those seen at the western front. In France the majority of wounds are inflicted by shells, whereas in the Dardanelles the injuries are mostly caused by bullets. This is attributed to the fact that the Turks are not well supplied with artillery. The proportions given are as follows: bullet wounds, 77.8 per cent.; shell, 11.1; fragments of stone, 1; wounds caused by agents impossible to recognize, 11.1 per cent.

Analysis of Wounded.—The *Lancet* has published an analysis of the first thousand cases treated at the American Red Cross Hospital, Paignton, South Devon, England. This shows that out of 425 wounded received in the hospital, 41.2 per cent. were suffering from perforated wounds (shrapnel or gunshot), 59 per cent. from nonperforated wounds (shrapnel, gunshot, shell or grenade), and only 0.6 per cent. from incised (bayonet) wounds. In 254 cases, the wounds were infected, but only two cases of tetanus occurred. The average time between the receipt of injuries and of the first aid dressing was 6.53 hours. Of the 1,000 patients, 623 were discharged cured, 345 were improved, 29 not improved, and 3 died.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending Aug. 14, 1915, lists the following contributions:

Dr. W. L. Keller, Hot Springs, Ark.	$ 5.00
Dr. E. C. Ellett, Memphis, Tenn.	10.00
Dr. David W. Cheever, Boston, Mass.	20.00
Receipts for the week ending August 14	$ 35.00
Previously reported receipts	7,779.84
Total Receipts	$7,814.84

Previously reported disbursements:		
1,625 standard boxes of food at	$2.20	$3,575.00
1,274 standard boxes of food at	2.30	2,930.20
353 standard boxes of food at	2.28	804.84
Total disbursements		7,310.04
Balance		$ 504.80

F. F. Simpson, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

The Budapest Unit.—Dr. Charles McDonald, Salem, N. J., director of Unit "E," American Red Cross, at Budapest, Hungary, in his report to the chief surgeon of the American Red Cross, in Washington, gives an account of the work done by his unit. From October 1914, until the end of the year, the unit had in charge a hospital with 200 beds and, soon after its arrival, the resources of the institution were taxed by the sick and wounded coming directly from the front. At one time there were 80,000 wounded in Budapest. The medical cases included cholera, typhus fever, tetanus, typhoid fever, dysentery and gastro-enteritis. There were many nervous and mental cases and the condition of the soldiers as to cleanliness was very poor and vermin were abundant. Among the wounds, those from shrapnel were most frequently encountered. Many fractures were treated, almost all of the compound variety, and practically all open wounds were infected, in many cases with gaseous gangrene as a complication. The modern steel jacketed bullet of high velocity was found to be humane and the wounds received rarely fatal. Dr. McDonald recommends the addition of iodin to the first aid packet. He also directs especial attention to the care of the feet of soldiers.

PARIS LETTER

PARIS, July 29, 1915.

The War

CREATION OF A SUBDEPARTMENT TO INCLUDE THE MEDICAL SERVICE

Three assistant secretaries have just been appointed in the war department, one of whom, M. Justin Godard, deputy from Lyons, has been placed at the head of the military medical service. Complete authority has been given to him with regard to all technical questions and those pertaining to the supply of materials. The assistant secretary decides and submits to the minister of war all questions with regard to the staff, etc., of the medical service.

THE WORK OF THE SOCIETY FOR AIDING WOUNDED SOLDIERS

During the ten months which elapsed between the opening of hostilities and June 1, 1915, the Société Française de secours aux blessés militaires, which is one of the three societies composing the French Red Cross, had assured the operation of 773 auxiliary hospitals, representing 70,000 beds, of ninety-three first-aid posts established in the sixth and twentieth regions, of eighty-eight infirmaries and of forty-five railway station canteens where the sick and wounded receive the necessary care and soldiers passing through are fed. In these hospitals are employed 12,000 nurses with diplomas; 10,000 assistants give their aid in the kitchens, linen rooms and sterilization rooms. Sixteen of these nurses and assistants had paid for their devotion with their lives by June 1. Five were killed during the bombardment of Rheims; the others succumbed to contagious diseases contracted while nursing the wounded. Among the nurses of the society, one has received the medal of the Legion of Honor, thirty have been mentioned in the orders of the day, and thirty-three have received the medal of epidemics.

The society has organized a rapid transportation service for the wounded which consists of eighty-eight automobiles, divided into a certain number of units. It has also sent many articles of clothing and comforts for the sick to the hospitals and the ambulances and to the front.

In order to perform all these services, the society has expended the considerable sum of 21,484,000 francs ($4,296,800). At the beginning of the war, the Société Française de secours aux blessés militaires had at its disposal about 8,000,000 francs ($1,600,000); the rest it owes to the generosity of the public.

An American friend of France, who desires to remain anonymous, has just sent to Mrs. Wharton a gift of 40,000 francs ($8,000) for the society. This gift is to be used in fitting out an automobile unit for the sanitary service at the front. These auxiliary automobile units include a car for sterilization, one for roentgenography, one for douche baths and cleansing, and one for supplies. Four of these new units are already operating at the front, and have rendered great services.

THE COURSE TO BE PURSUED WITH SOLDIERS WHO REFUSE TREATMENT OR OPERATIONS REGARDED AS NECESSARY

The minister of war has on various occasions been consulted with regard to soldiers who refuse immunizing treatment against certain diseases, or operations for the cure or amelioration of conditions produced by wounds. The refusal may be due to the soldier's failure to comprehend his own interests, to sheer cowardice, to the desire of prolonging his stay in the hospital, and sometimes to the hope of escaping military service or of obtaining a high rate of indemnity. The following are the instructions on the subject which the minister has sent to the military physicians:

In general, it is important to avoid any coercive measures. The physician should use persuasion, explaining to the soldier the purpose of the proposed measure and showing him his true interest and the benefit that he may expect from the treatment or operation to which he hesitates to submit.

In a case of categorical refusal, the solution of the problem varies according to the factors entering into it:

1. When it is a question of legally prescribed measures involving both individual and collective prophylaxis, such as vaccination against smallpox or typhoid, it is not permissible to decline the treatment. In the interests of the community the treatment should be applied without exception. Refusal to submit to it may be treated as a breach of military discipline.

2. When a wounded man refuses a simple and bloodless method of treatment, such as various procedures of physiotherapy (massotherapy, mechanotherapy, thermotherapy, electrotherapy, etc.), which tend to ameliorate the patient's infirmities without any risk whatever and to reduce his incapacity for labor, he may be treated as a malingerer who intentionally prolongs or aggravates his condition by refusal of care with intent to reduce his aptitude for service and augment the chances or the amount of final compensation. Any suitable disciplinary measures may be applied.

3. The right to refuse a bloody operation with or without anesthesia is considered absolute in law and jurisprudence, because every bloody operation entails a risk of death. The exercise of this indisputable right of refusal, however, may entail certain consequences. The wounded man may have his final indemnification reduced, especially in the following two cases: (*a*) when the operation is very trifling and does not require general anesthesia (incision of a superficial purulent collection, extraction of an easily accessible bullet, etc.); (*b*) when an operation is urgent beyond all doubt to avoid a complication capable of producing an important or absolute incapacity (refusal to submit to the enucleation of a wounded eye in case of threatened sympathetic ophthalmia, or to the amputation of a limb in gangrene, etc.). In such case the physician should give the patient friendly advice that the operation offers the sole chance of survival or of minimum infirmity. He should suggest a consultation with one or several physicians, or, if necessary, removal of the patient to a regional surgical center. If, notwithstanding, the patient persists in his refusal, the physician in charge of the case should draw up a report, giving exact data with reference to the proposed operation, its justification and the patient's refusal with his reasons. This report is to be signed by the patient, the physician in charge of the case and the physician in chief.

With such a report before them, experts are to estimate on a fractional scale the degree which the operation might have reduced the total incapacity for work. When applications for retirement pension or for relief pension are passed on, the surplus functional incapacity caused by the failure to submit to treatment or operation is to be taken into account.

THE MEDICAL SERVICE AT THE FRONT

An ambulance physician has just published a very instructive article on this subject in the *Revue scientifique*. At present, he says, the weak point of the organization of the medical service is the following: Each army corps possesses sixteen ambulances which the administration regards as interchangeable. Instead of being specialized, these ambulances are supposed to be always ready to substitute for each other, and to become, according to circumstances, a surgical or a medical center or a center for the treatment of contagious diseases. It is indispensable, on the contrary, that when an ambulance is adapted to a certain task by experience or even by makeup, it should be devoted exclusively to that work. According to the author, specialization should be the pivot of a serious reorganization of the medical service at the front, as it has been of that of the rear.

Among the ambulances of a division, two should be particularly devoted to the treatment of the wounded who need only to have their wounds dressed before they are sent to the rear. The staffs of these ambulances should be made up of good, experienced general practitioners. There should also be in each division a special surgical ambulance devoted exclusively to the treatment of wounded men whose con-

dition calls for particular attention or for urgent operation (serious mutilation of limbs, lesions of the main arterial trunks, and wounds of the chest, the head, the eye and especially of the abdomen). The staff of this ambulance should include a professional surgeon, sufficiently sure of himself to undertake any of the sometimes very complicated and delicate operations demanded by battle wounds, and two good assistants. Also a special medical ambulance should be installed in each division on the same model as the surgical ambulance and with a staff as carefully selected, to handle all cases of serious acute diseases which ought to be treated on the spot because of the dangers to the patient of removal to the rear. Here also the choice of the physician should be particularly circumspect, for it is no easier to transform oneself into a medical specialist than into a surgeon.

PROMOTION OF AUXILIARY PHYSICIANS

As I mentioned in a previous letter (THE JOURNAL, June 12, 1915, p. 2002), medical students who have twelve *inscriptions* (that is to say, who have completed three years of studies) may be appointed auxiliary physicians (a grade equivalent to that of the highest rank of noncommissioned officer). The minister of war has just decided that the grade of physician *aide-major* of the second class (which corresponds to the grade of second lieutenant) may be conferred, on the initiative of their superior officers, on auxiliary physicians who have served for at least six months with the army in the field, who have at least twelve *inscriptions*, who have been wounded or mentioned in the order of the division, the army corps or the army, and who have been noted by the director of the medical service as technically fit to perform temporarily the duties of the position.

LONDON LETTER

LONDON, Aug. 6, 1915.

The War

THE SHORTAGE OF PHYSICIANS

The shortage of physicians in the voluntary hospitals was the subject for conference held by the British Hospitals Association at which it was stated that the expense incurred on resident physicians is greatly in excess of that incurred in normal times. As yet no hospital is in extreme difficulties. Most of the hospitals that require only two or three residents have been able to make good their vacancies, but those in the nonteaching hospitals, requiring four, five, or six officers, are having greater difficulties. On the whole, however, the work has not generally been restricted though outpatient work has been reduced. To meet the shortage, women physicians have been appointed to aid in the casualty departments. As regards the hospitals with medical schools the War Office has met the situation by giving temporary honorary commissions to the men qualified after each medical examination. The guarantee is given that not more than five men shall be called up at once, but they are liable to be summoned at forty-eight hours' notice, and all are liable for service at the end of three months, while all sign a contract undertaking to serve for a year at home or abroad. The situation in the nonteaching hospitals, however, has not been met, and it is difficult for them with salaries to offer between $750 and $1,000, to compete with the War Office, that is offering as much as $2,500 in money, and in addition the attractive conditions connected with the wearing of khaki. It has been suggested that the general practitioners at the war hospitals should extend the amount of their services and that the graduates of foreign universities be utilized. Several of the graduates of Canadian and Australian schools have served with great success. In the case of America there is no difficulty as to language, but there is the problem of medical registration.

CONFERENCE ON ARTIFICIAL LIMBS

The mutilations consequent on this terrible war have brought the question of artificial limbs forward. An international exhibition of artificial limbs and a conference on the subject has been held. Sir Watson Cheyne, president of the Royal College of Surgeons, presided. He pointed out that long delay in fitting artificial limbs after amputation often led to wasting of the muscles. The fitting of artificial limbs was, naturally, more difficult in military than in civil practice, for in the latter the operation could usually be designed so as to preserve the best possible stump. Amputations in war, on the other hand, very often could not be made on set lines if as much of the limb as possible was to be saved, with the result that the scars and flaps which covered the stump were sometimes much more tender and much less fit to bear weight than after the ordinary amputations. The fitting of a limb was thus a more troublesome business, and any uncomfortable pressure quickly wore down a man's spirit and energy. Sir Arthur May, medical director general of the Royal Navy, said that in ordinary peace conditions the number of men who lost their limbs in the navy was much greater than in the army. In war, however, this relation had been reversed, and there were twenty or thirty times as many cases of loss of limbs in the army as in the navy. Still, the cases in the navy were much larger in number than before the war. The number was so large that delay in provision was inevitable, yet the longer a man went without his artificial limb, when once he was ready for it, so much the worse for him. Surgeon General M. W. Russell, deputy director general of the Army Medical Service, said that the aim of the conference was to focus the present position of the artificial limb industry. The supply of artificial limbs in war time was quite a different matter from the supply in peace; the question for consideration was how the expansion in demand might be met by a corresponding expansion in supply. A resolution was carried asking the orthopedic surgeons who had been called into consultation to draw up a report advising as to the most suitable artificial limbs for various amputations. Mr. T. H. Openshaw made an interim report on the judging, and announced the awards of medals.

Gambling in Life Insurance

In this country it is illegal to gamble in the life of another person by taking out an insurance policy. Such a policy is therefore void. For insurance to be legal the person who takes out the policy must have an "insurable interest" in the life in question, that is, must in some way be a loser by the person's death. Nevertheless attempts to gamble in insurance are made from time to time. In a case which has just been before the court Mr. Justice Scrutton strongly condemned the taking out of policies by the lower classes assisted by the greed of insurance agents to gamble in the lives of others. The plaintiff, a woman, took out policies on the lives of her daughter, brother, husband's uncle, her little boy and the mother of the husband's first wife. She also effected insurances on people who were not relations. She was therefore described by the judge as a professional gambler in the lives of others. In one case she took up the policies taken up by a man on the life of a woman who owed him money and on the lives of two others for whom he had not insurable interest. He got tired of paying the premiums on the lives of some of these persons who obstinately continued in good health, but the superintendent and agent of the insurance society did not desire that the policies should lapse and, knowing the plaintiff's proclivity, persuaded her to pay the premiums and keep the policies alive. After a time she began to have some doubt either as to the legality or profitableness of her venture and when the premiums were beginning to get to the amount she would receive on the death of the insured she claimed them back and on refusal sued the society. The agents of the society evidently gave her some assurance that the transaction was all right. In the court their lawyer contended that it was an illegal transaction—that each party being of equal guilt, the plaintiff could not recover for misrepresentation; that the misdeeds of the defendants, if any, had nothing to do with the matter, and that the court would be enforcing a public interest by declining to allow either party to succeed on a claim based on an illegal transaction. The plaintiff's counsel replied that the parties were not of equal guilt, as the defendants had obtained the premium by the fraud of their agents. Mr. Justice Scrutton held that to say that a policy was all right was not necessarily fraudulent, because it might mean that the policy, though not legally enforceable, would be paid in honor, or that it was a legally enforceable policy. He declined to hold that in the case of a policy prohibited by law, money paid under it could be recovered, even if the payment was induced by a fraudulent representation. While he thought the plaintiff was far from being an injured innocent, in the view the jury took she might have believed the policies were valid. He found for the defendants on the ground that the policies were prohibited by statute, and he did not think the court ought to enforce the repayment of money paid under them. As, however, he was not satisfied with the conduct of the defendants, judgment would be without costs.

Marriages

LIEUT. ALEXANDER WATSON WILLIAMS, M. C., U. S. Army, Texas City, Tex., to Miss Florence Hanson Light of Washington, D. C., August 12.

CAPT. JOHN ROY MCKNIGHT, M. C., U. S. Army, Fort Stotzenburg, P. I., to Miss Clara Mabel Stayer, at Manila, P. I., March 10.

LUTHER MITCHELL FERGUSON, M.D., Newtonville, Mass., to Miss Edith Gray of Brookline, Mass., at Longwood, Mass., August 4.

CHARLES WESLEY LEFEVER, M.D., Philadelphia, to Miss Susan V. Knight of Vermont, at Dummerstown, Vt., August 7.

CALVIN HOOKER GODDARD, M.D., Baltimore, to Miss Eliza Cunningham Harrison of New Kent County, Va., August 3.

RUPERT FOLGER, M.D., to Miss Bertha May Whitford, both of Whitestone, L. I., N. Y., in New York City, August 2.

CLAUDE MCRAVEN, M.D., Cape Girardeau, Mo., to Miss Adah M. Coy of East St. Louis, in St. Louis, August 5.

WILLIAM HALLECK BRADDOCK, M.D., to Miss Victoria Barbara Francefort, both of New York City, July 31.

KARL KROGH AMUNDSON, M.D., to Miss Daisy Sarah Porter, both of Cambridge, Wis., July 28.

FRANK S. PECK, M.D., to Miss Mary Morris, both of Oklahoma City, Okla., recently.

Deaths

Charles Herbert Bradley, M.D. Northwestern University Medical School, Chicago, 1890; aged 50; a Fellow of the American Medical Association; a member of the Minnesota Pathological Society; from 1904 to 1910, secretary-treasurer, and in 1911, president of the Hennepin County (Minn.) Medical Association; for six years assistant physician in the Kankakee (Ill.) State Hospital; for many years a member of the staff of the Minneapolis State Hospital; clinical instructor in medicine in the University of Minnesota in 1912 and 1913; died at his home in Minneapolis, August 1, from disease of the brain. The Hennepin County Medical Society and the visiting staff of the Minneapolis City Hospital, at special meetings adopted resolutions regarding the death of Dr. Bradley, and six members of the Hennepin County Medical Society acted as pallbearers at his funeral.

Thomas Lawrence McDermott, M.D. Bellevue Hospital Medical College, 1866; aged 71; formerly a member of the Kentucky State Medical Association; consulting physician to St. Mary and St. Elizabeth's Hospital and the Louisville City Hospital; a member of the Board of Public Safety of Louisville; formerly a member of the city council; died in St. Joseph's Infirmary, Louisville, August 1, from carcinoma of the throat. Resolutions on the death of Dr. McDermott were adopted at a special joint meeting of the board of aldermen and the board of councilmen and the pallbearers at his funeral were, the mayor and seven of Dr. McDermott's friends in the medical profession.

Emily Myers Oberlin, M.D. University of Michigan, Ann Arbor, 1909; aged 48; formerly a Fellow of the American Medical Association; a member of the Michigan State Medical Society; of Oshkosh, Wis.; at one time a member of the Mayo staff, Rochester, Minn., and later pathologist and director of the laboratory of the Woman's Hospital, Ann Arbor, Mich.; prominent in public welfare and charity and correction work; died in Minneapolis, about August 7.

John Bacon, M.D. University of Pennsylvania, Philadelphia, 1889; aged 50; a Fellow of the American Medical Association and a member of the Philadelphia College of Physicians; for two years physician to the Eastern Penitentiary; for twenty years a practitioner of Torresdale, Philadelphia; a member of the staff of the Jewish and Frankford hospitals; died in the University Hospital, Philadelphia, August 2.

Eric M. Lundholm, M.D. Carolinean Medico-Surgical Institution, Stockholm, Sweden, 1890; aged 57; a Fellow of the American Medical Association and chief surgeon to the Bethesda Hospital, St. Paul; died in Rochester, Minn., August 6, from pneumonia following a surgical operation. Six members of the medical staff of Bethesda Hospital acted as pallbearers at the funeral.

Philip Coffman Palmer, M.D. Rush Medical College, 1884; aged 64; of Kansas City, Mo.; formerly professor of diseases of women and surgical gynecology in Columbian Medical College, Kansas City, and head physician of the Modern Woodmen of America; died August 1, from heart disease, while being taken from the Union Station, Kansas City, to the German Hospital.

Morris Milton Caldwell, M.D. Jefferson Medical College, 1905; aged 36; a member of the Medical Society of the State of North Carolina; a promising young practitioner of Wilmington; while being conveyed in a small boat from Wilmington to a German vessel interned in the Cape Fear River, was accidentally drowned by the capsizing of the boat, August 7.

P. Brynberg Porter, M.D. University of Pennsylvania, Philadelphia, 1869; aged 70; of New York City; for several years secretary of the Medical Association of the Greater City of New York and a member of the American Therapeutic Society; New York editor of the *Boston Medical and Surgical Journal;* died in St. Mark's Hospital, New York City, July 6.

Charles Thomas Harper, M.D. University of Maryland, Baltimore, 1894; aged 42; of Wilmington, N. C.; a Fellow of the American Medical Association and a member of the State Board of Medical Examiners of North Carolina; who was operated on for appendicitis recently at Harpers' Sanitarium, Wilmington; died in that institution, August 9.

Andrew Walker Herdman Lindsay, M.D. Dalhousie University (Halifax, N. S. Medical College), 1875; University of Edinburgh, Scotland, 1877; aged 63; secretary and registrar of the Provincial Medical Board of Nova Scotia and secretary and professor of anatomy in his alma mater; died recently at his home in Halifax.

John Henry Borneman, Jr., M.D. Jefferson Medical College, 1903; aged 35; a Fellow of the American Medical Association and a promising young physician of Wilmington, N. C.; was drowned August 7, while being taken in a boat to the *Nicaria,* a German vessel interned in the Cape Fear River, near Wilmington.

Athanase Edouard Gourdeau, M.D. Victoria University, Coburg, Ont., 1873; aged 65; a member of the Michigan State Medical Society, and for more than thirty years a practitioner of Ishpeming, Mich.; died in Laurier's Camp, near Little Lake, Mich., August 2, from carcinoma of the throat.

Delano Stapleton Fitzgerald, M.D. University of Paris, France, 1880; aged 62; of Baltimore; who retired from practice several years ago and since that time had traveled extensively; died at his summer home, Esperanza, near Garrison, Baltimore County, Md., August 6, from heart disease.

George R. Duncan, M.D. University of Tennessee, Nashville, 1885; aged 67; died at his home in Fall Branch, Tenn., July 29, from the effects of a gunshot wound of the heart, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health.

Walter W. Wolfe, M.D. Medical College of the State of South Carolina, Charleston, 1879; aged 61; a practitioner of Fort Motte, S. C., for thirty years; died in a hospital in Columbia, S. C., July 25.

Joseph A. Ferrin, M.D. College of Physicians and Surgeons, San Francisco, 1907; aged 29; of Half Moon Bay, Calif.; died in Calistoga, Calif., July 1, from pulmonary tuberculosis.

David B. Umstead, M.D. Hahnemann Medical College, Philadelphia, 1878; aged 58; of Tacony, Philadelphia; died at his summer home in Wildwood, N. J., July 25, from heart disease.

Jason B. Hitchcock, M.D. State University of Iowa, College of Homeopathic Medicine, Iowa City, 1880; aged 66; of Montfort, Wis.; died in Long Beach, Calif., about July 23.

Orville Clark Strong, M.D. University of Buffalo, N. Y., 1871; aged 81; a Fellow of the American Medical Association; died at his home in Colden, N. Y., July 29.

Amasa W. Manire, M.D. University of Nashville, Tenn., 1870; aged 78; a Confederate veteran; died at his home in Tullahoma, Tenn., about July 22.

Richard Lewis Howell, M.D. Jefferson Medical College, 1879; aged 57; who retired from practice many years ago; died at his home in Boston, July 26.

Thomas H. Collins, M.D. Baltimore University, 1903; aged 35; milk inspector of Lawrence, Mass.; died at his home in Lawrence, April 7, from sarcoma of the stomach.

Correspondence

Alcohol in the European Armies

Sehr geehrter Herr Redacteur:—In der Nummer 20 vom 15. Mai d.J. bringen Sie unter dem Titel "Alcohol in the European Armies" eine Zusammenstellung nach dem *British Medical Journal* über den täglichen Alkoholverbrauch der fechtenden Truppen, die soweit sie die deutschen Truppen angeht sinnlos ist. Sie schreiben, der Deutsche Soldat bekommt täglich 1,793 Gramm Bier und 20 Gramm Branntwein, konsumiert also täglich 70.7 Gramm Alkohol. Ich weiss nicht wie Sie oder das *British Medical Journal* gerade auf 1,793 g. Bier kommen, aber dass diese Zahl unmöglich ist, hätten Sie sich denken können. Nehmen wir an, wir hätten 3 Millionen Soldaten an den Fronten—es werden wohl mehr sein—so bekämen diese täglich 5,379,000 Kilogramm Bier. Der Liter Bier, incl. Verpackung, wiegt nach der Berechnung der Brauereien, 1.65 Kilo, das Tagesquantum der Armee demnach 8,875,350 Kilo; ein Eisenbahnwagen für Bier fasst 10,000 Kilo Nutzlast. Es müssten also täglich 887 Eisenbahnwagen nur mit Bier nach den verschiedenen Operationsgebieten und ebensowiel zurück gehen, eine Belastung der Bahnstrecken, die der Heeresleitung schon deshalb zuviel werden müsste, weil wir auch sonst noch allerlei in die Operationsgebiete zu transportieren haben. In Wirklichkeit besteht überhaupt kein regulärer Alkoholkonsum, die körperliche Leistungsfähigkeit wird lieber mit Kaffe und Thee stimuliert und wenn sich einmal ein Fass Bier in eine Ruhestellung verirrt, so ist es schon ein freudiges Ereignis für die Soldaten. Sie müssen sich schon darauf gefasst machen, dass Ihre Frage, wieweit militärische Erfolge durch "Dutch courage" d. h. also in Rausch errungen werden, für die Erfolge Deutscher Truppen ein ungelöstes Problem bleiben wird.

Mit ausgezeichneter Hochachtung,

Dr. Walther Straub, Freiburg i/Br., 10. Juli, 15.
Prof. a. d. Universität Freiburg, i/Br.

TRANSLATION

To the Editor:—In The Journal, May 15, 1915, page 1663, appears an editorial comment entitled "Alcohol in the European Armies," which is based on figures obtained from the *British Medical Journal* discussing the daily consumption of alcohol by the armies in the field. So far as these figures are intended to apply to the German troops, they are without basis and fact. It is said in the editorial comment that the German soldier is allowed 1,793 gm. of beer and 20 gm. of brandy daily, amounting to a total of 70.7 gm. of alcohol a day. I do not know how you or the *British Medical Journal* happened to take the figure 1,793 gm. of beer, but that this could not possibly be true should have occurred to you. Let us assume, for the sake of argument, that there are 3,000,000 soldiers at the front, although there are probably more than that. They would receive 5,379,000 kg. of beer daily. A liter of beer, including packing, weighs, according to the estimation of the breweries, 1.65 kg., so that the daily allowance for the army would total 8,875,350 kg. The ordinary freight car carrying beer will hold 10,000 kg. Therefore, 887 such cars filled with beer would have to be shipped to the front daily and as many returned. Such freight traffic, under present conditions, is an impossibility because so many other things must be transported to the front at this time. In reality there is no regular alcohol allowance or consumption. The soldiers are given coffee and tea as stimulants, and not alcohol; and if, by any chance, a keg of beer should happen to fall into the hands of the soldiers, it is cause for celebration. You must be prepared to find unsolved in the final analysis the problem as to how much military efficiency among the German troops may be increased by means of so-called "Dutch courage."

Very respectfully yours,

Walther Straub, M.D., Freiburg im Breisgau, July 10, 1915.
Professor of Pharmacology, University of Freiburg im Breisgau.

[Comment.—The editorial commented on by Professor Straub was based on a discussion of "Alcohol in European Armies," which appeared in the *British Medical Journal*. Presumably, the figures quoted were based on the army regulations in the different countries. It was not claimed that the regulation ration was issued every day to every man in the army. The discussion in the *British Medical Journal* has centered around the wisdom of issuing a ration of rum to the men on duty in the trenches. Professor Straub's *reductio ad absurdum*, therefore, does not have any direct bearing on the point under discussion.—Ed.]

Save the Catgut

To the Editor:—Some time ago The Journal spoke of the desperate need of surgical supplies of all kinds among the emergency hospitals not directly under military or Red Cross control, and the French Wounded Emergency Fund was started. Though working hard getting surgical dressings for the Red Cross and our own hospitals, I was restimulated by Mary Rinehart's article, "The Red Badge of Mercy," in the *Saturday Evening Post*, July 31. The idea has probably occurred to others, but is not carried out systematically, namely, of preserving unused pieces of sterile catgut from clean operations, and at once placing it in glass jars in strong alcohol. I have started our own hospital, and others in the city have promised to follow suit at once. I am convinced that hundreds of yards of good usable catgut are being thrown away daily in Canadian and American hospitals.

I make a special appeal that this catgut may be properly saved and forwarded frequently to the fund mentioned above or to the Red Cross for sending to these hospitals.

Sterile chromic, iodized, formaldehyd or plain catgut from clean operations, immediately placed in strong alcohol and covered, will remain sterile and usable for months.

How often we open a tube of catgut to use only a small part of it; the remainder, often a couple of feet, is thrown away.

This saving can be and should be undertaken at once by every hospital and surgeon using quantities of catgut, even among those whose sympathies lie with Germany, for German wounded are helped as are the British and French. No matter what our side, the great outstanding fact faces us that thousands of wounded of both sides are in desperate need of surgical supplies.

Our duty is plain.

The catgut now wasted can be used to save lives in desperate need of it at this moment in France.

Do it now!

Gordon G. Copeland, M.D., Toronto.
Assistant Obstetric Surgeon, Toronto Western Hospital.

Quackery and Fee-Splitting

To the Editor:—Apropos your "unchangeableness of man's artistic powers," ("Psychology and Art of the Cave Man," editorial, The Journal, Jan. 31, 1915, p. 729), I submit that the title will, with slight variations, cover all his other powers. Remoteness and strangeness of time, place and society can never alter man's nature. Quackery, like other stigmata, endures because of a thousand sincere followers "boosting" without hope of or desire for reward. It is the "I cannot otherwise" tyranny of infatuation of indolent and elementary minds that raise personal preference to the dignity of a creed. It is easier to accept an idea than to form one. Nearly a thousand years ago Sadi wrote:

A man had sore eyes. He went to a horse doctor who applied to his eyes what he used for his horses. The man became blind. He took the case before the judge, who said, "No damages; if this fellow were not an ass he would not have gone to a farrier."

Hans Sachs (1494) must have had in mind the origin of fee-splitting when he wrote:

The devil to a doctor said, "I'll go
Unto a burgher in your town,
Who's rich enough to buy a crown:
And I will give him such a pain
That soon as you come by again,
You enter in and pray me out;
That is upon a ransom stout —
Some twenty gulden fair laid down,
At which the rich man will not frown.
So then between yourself and me
The money even shared shall be."

J. H. Mackay, Francitas, Tex.

Prevention.—Disease prevention is the only practical procedure by which we may hope to establish and maintain a low death rate. We will succeed only to the degree that all the people become interested to the point of cooperation. —North Carolina *Health Bulletin*.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE MEDICAL RESERVE CORPS

To the Editor:—Who and where is the official head of our Medical Reserve Corps? What are the requirements for appointment to the service, and how are appointments obtained? What military rank and what pay, if any, does such appointment carry with it?

H. C. M., Del Norte, Colo.

ANSWER.—The Surgeon-General of the Army is officially the head of the Medical Reserve Corps. The membership of the Medical Reserve Corps consists of first, the contract surgeons on duty at the time of the passage of the bill establishing the Medical Reserve Corps, conditioned on their application receiving the approval of their chief surgeon; second, young practitioners who desire eventually to enter the Medical Corps of the Army and who, on passing the preliminary examination, are commissioned first lieutenants, Medical Reserve Corps, active list, and ordered for instruction to the Army Medical School, Washington, D. C.; third, medical practitioners of established reputation, who, having passed the required examination, are commissioned as first lieutenants, Medical Reserve Corps, inactive list, and who may be called on at any time when an "existing emergency" demands. The requirements for commission in the Medical Reserve Corps are that the candidate is a citizen of the United States, a graduate of a reputable medical college, within the ages of 22 and 45 years, and that he pass the required examination. Application for examination should be made to the Adjutant-General of the Army, Washington, D. C., and should be accompanied by two letters in the form of testimonials as to character, standing, etc. Examination is authorized for a date mutually agreeable to the candidate for commission and the officer conducting the examination. The examinations are, when practicable, held under the direction of an officer of the Medical Corps; but when this is not practicable, officers of the Medical Reserve Corps have in some instances been authorized to conduct the examination. The examination is both physical and mental, the latter covering the following: (*a*) practice of medicine, including etiology, clinical description, pathology and treatment of diseases; (*b*) surgery, principles and practice; (*c*) obstetrics and gynecology; (*d*) hygiene, personal and general, especially as to the prophylaxis of the more prevalent epidemic diseases. This examination is oral and sufficiently comprehensive to determine whether, in the opinion of the board, the applicant is (or is not) qualified to practice his profession under the usual conditions of the military service.

The rank of officers of the Medical Reserve Corps is that of a first lieutenant in the Army; the pay on active duty, $2,000 per year, with 10 per cent. increase for each five years of active service up to twenty years. There is no pay while on the inactive list. On active duty, officers of the Medical Reserve Corps enjoy "all the rights and privileges" of commissioned officers of the Army. They are not entitled to promotion or to retired pay, but are entitled to pension for injury or disability incurred in line of duty.

FISHER REMEDY—A MERCURY NOSTRUM

To the Editor:—Under separate cover I am sending in its original box a capsule which is reported to contain no mercury, but to be a specific cure. Five capsules sell for $25. The physician directs the patient to take courses of five capsules, one capsule each day, with an interval of three weeks between courses. The patient is warned against taking milk, oysters or liquor during the administration of the drug and for two or three days thereafter.

This treatment was taken by a patient of ours who had multiple gummas of the ribs, which healed under its administration, leaving him, however, with an extreme thirst, extreme polyuria, loss of weight and anemia. This patient, after taking four capsules, became so nauseated that he refused to take the fifth.

Could you give me any data about the remedy, or must I conclude that these symptoms are an extension of the disease rather than the effect of the treatment?

WILLIAM N. ANDERSON, M.D., Omaha.

ANSWER.—The letter and specimen were submitted to our Chemical Laboratory which reports:

The small square pill box sent by Dr. Anderson, containing one capsule, bore a label with illustrations of five capsules. On the center capsule the word "Hero" appeared, and around it the inscription "Fisher Remedy. A Treatment for All Blood Diseases. Trademark registered. Manufactured by N. Bergman & Co., San Francisco, U. S. A."

The single capsule contained a grayish, moist mass weighing 1.07 gm. and possessing a slight licorice-like odor. When treated with water, the mass rapidly disintegrated; and when the mixture was poured into a tube, a heavy lemon-yellow substance settled to the bottom, followed by a layer of gray material.

From our examination it is concluded that the capsule contains a mixture essentially of mercury, with chalk and mercuric subsulphate, with some starch and licorice root as excipients.

As mercuric subsulphate has emetic properties, it is probable that the patient's nausea was due directly to this drug.

This preparation is probably a new form of a mixture put out in the form of boluses a few years ago by one Fisher in Shirland, Ill. These boluses were irregular in shape and size, but were practically identical in composition with the capsule just examined, as they also contained mercury with chalk, mercuric subsulphate and an excipient.

NURSING IN PREGNANCY

To the Editor:—I frequently meet laymen who have the idea that a mother who is pregnant should never nurse a baby. Presumably this is based on the belief that deleterious products exist in the milk of the mother under such circumstances. I have never seen anything to this effect in medical literature, and cannot recall ever having observed any ill results from a pregnant mother nursing a baby.

FRANK P. NORMAN, M.D., Greenville, Ga.

ANSWER.—So far as is at present known, the existence of pregnancy has no bad effect on the breast milk except in the reduction of the quantity in certain instances. There is no proof that pregnancy develops deleterious products in the milk. The deterioration of the breast milk which sometimes occurs is frequently due to nervous shock produced by the discovery of the new pregnancy. It is a common occurrence among the poorer classes in France to see a mother six or seven months pregnant nursing a baby.

ARTICLES ON BLADDER HERNIA

To the Editor:—Please give a list of articles on bladder hernia complicating femoral hernia; diverticulum of the bladder; simple bladder hernia.

I recently operated on a patient who supposedly had femoral hernia on the left side. Operation disclosed that the hernia consisted of the bladder and peritoneal sacs firmly adherent to each other.

G. S. S., Virginia.

ANSWER.—

Finsterer, H.: Hernia of Bladder, *Beitr. z. klin. Chir.*, 1913, lxxxi; abstr., THE JOURNAL, Feb. 8, 1913, p. 484.

Lower, W. E.: Improved Method of Removing Diverticulum of Urinary Bladder, *Cleveland Med. Jour.*, January, 1914; abstr., THE JOURNAL, Feb. 7, 1914, p. 489.

Lower, W. E.: Diverticulum of the Urinary Bladder, THE JOURNAL, Dec. 5, 1914, p. 2015.

Cabot, H.: Ten Cases of Diverticulum of Bladder, *Boston Med. and Surg. Jour.*, Feb. 25, 1915; *ibid.*, March 11, 1915.

GRANT'S EPILEPSY CURE

To the Editor:—A patient of mine is taking a treatment for epilepsy furnished by "Dr. Fred E. Grant," Kansas City, Mo. I am sure from the type of correspondence and wrapper on bottle that he is another "quack." Will you kindly give me what information you can about Grant and his treatment, and if you have exposed him please send me your pamphlet and I will remit in stamps whatever the charge and postage. My patient shows a fine folliculitis — probably bromid — and I presume this is just another fake in the same class of the many you have so admirably exposed. Please try to send the information at your earliest opportunity, as I want to get this patient out of quack hands as soon as possible.

L. E. H., New York.

ANSWER.—Your surmise is correct. Fred E. Grant's epilepsy cure was examined some months ago in the Association's laboratory. The results of the examination and a report on the nostrum itself appears in the pamphlet "Epilepsy Cure Frauds," price 10 cents.

Medical Education and State Boards of Registration

COMING EXAMINATION

New Hampshire: Concord, September 15-16. Sec., Dr. Walter T. Crosby, Pembroke Bldg., Manchester.

Illinois January Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, Jan. 13-15, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 55, of whom 39 passed and 15 failed. One candidate did not complete the examination. The following colleges were represented:

College	Year Grad.	Total No. Licensed
PASSED		
Columbian University	(1900)	1
Bennett Medical College	(1911, 1) (1914, 2)	3
Chicago College of Med. and Surg.	(1912) (1913) (1914, 9)	11
College of Med. and Surg., Chicago, Physio.	(1909)	1
Hahnemann Med. Coll. and Hosp., Chicago	(1911) (1914)	2
Jenner Medical College	(1914)	1
Northwestern University	(1897) (1911)	2
Rush Medical College	(1911, 2) (1914, 6)	8
University of Illinois	(1914)	2
Johns Hopkins University	(1912)	1
Boston University	(1904)	1
Harvard University	(1912)	1
National Univ. of Arts and Sciences, Med. Dept.	(1913)	1
Washington University	(1912)	1
John A. Creighton Medical College	(1914)	1
Fordham University	(1914)	1
University of Zurich	(1911)	1
FAILED		
Bennett Medical College	(1914)	3
Chicago College of Med. and Surg.	(1914)	4
College of Med. and Surg., Chicago	(1912)	1
College of Med. and Surg., Physio., Chicago	(1910)	1
Illinois Medical College	(1910)	1
Hospital College of Medicine, Louisville	(1904)	1
University of Louisville	(1913)	1
Meharry Medical College	(1911) (1914)	2
Royal University of Palermo	(1911)	1

Arkansas May Report

Dr. J. T. Stout, secretary of the State Board of Arkansas Medical Society, reports the written examination held at Little Rock, May 11-12, 1915. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 45, of whom 42 passed and 3 failed. Two candidates were granted reregistration licenses. Seven candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
College of Physicians and Surgeons, Little Rock	(1911)	75.2
University of Arkansas	(1914) 75.1, 77.2; (1915) 76.2, 78.7, 79.4, 80.3, 81.6, 81.7, 82.2, 83.1, 83.2, 83.9, 84.1, 84.4, 85.7, 85.8, 86.1, 86.8, 88.4, 88.9, 89.3	
University of Louisville	(1909)	79.7
Tulane University of Louisiana	(1908)	83.2
St. Louis University	(1915)	89.5
Washington University	(1905)	82.9
Meharry Medical College	(1910) 83; (1915)	81.6
University of Tennessee	(1914) 76.4; (1915) 77.6, 77.9, 81.8, 82.1, 83.4, 83.6, 84.1, 86.5, 88.8, 89.7.	
Vanderbilt University	(1915)	81.1, 85.2, 90.2
FAILED		
College of Physicians and Surgeons, Little Rock	(1910)	56.7
University of Arkansas	(1912)	66.6
Meharry Medical College	(1915)	61.7

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
College of Physicians and Surgeons, Kansas City	(1902)	Kansas
Kentucky School of Medicine	(1891)	Indiana
Johns Hopkins University	(1908)	Wisconsin
Tulane University of Louisiana	(1913)	Louisiana
University of Nashville	(1896)	Oklahoma
Medical College of Virginia	(1899) (1911)	Virginia

Book Notices

A Text-Book for Midwives. By John S. Fairbairn, M.A., B.M., Obstetric Physician, St. Thomas Hospital; Lecturer on Midwifery, St. Thomas Medical School, Physician and Lecturer to Midwives, General Lying-In Hospital. Price, $3.75. Pp. 317, with 107 illustrations. Oxford University Press, 1914.

In accordance with the Midwife Act passed by the English Parliament in 1902, all midwives then in practice were admitted to the roll without evidence of education or training. Since then every woman wishing to practice as a midwife must go through a course of training provided by the Central Midwives Board (C. M. B.) and pass an examination. Many trained nurses take this course for midwives, but the County Councils may also send up handy village women who are also admitted to it. The minimum course of training seems very short, especially for those who have had no training as nurses. It covers a period of at least three calendar months in both theory and practice, consisting of at least fifteen lectures and requiring the personal attendance at the delivery of at least twenty patients in labor as well as the nursing of twenty puerperas and infants. Having completed the course of training, the candidate for registration as midwife must pass the examination by the C. M. B., when she is entitled to practice in accord with the provisions of the act and subject to the rules and regulations.

The author of this book has had over twelve years' experience as teacher and examiner of midwives, as well as in the capacity of lecturer in a medical school. He has prepared a book which is more comprehensive than has generally been considered necessary for midwives. The result of his experience, however, is that a more educated class with an insatiable thirst for knowledge is coming forward to qualify as midwives, and that they demand and need a comprehensive work that can be used for reference even if not studied thoroughly.

The book begins with an introduction giving the fundaments of general anatomy, physiology and bacterial infection. The rest of the book is divided into nine parts devoted to pregnancy, labor, puerperium and infant, including one part on hygiene and disinfection and one on the midwife's duties. There is also an appendix on note taking, weights and measures and drugs, as well as a glossary and a good index.

The theory has been combined with the practical rules to show the rationale of the latter. The theory has been developed in accord with the best modern teaching. The practical rules necessarily conform to the rules of the C. M. B., and are largely in definition and amplification of them. A few things seem worthy of notice. In the rules for the management of labor it seems strange that no mention is made of the use of gloves. In the preparation of the vulvar region, the statement that "it is not practicable to shave the parts" is not in accord with the best practice in this country. Allowing midwives to handle breech presentation cases we would regard as very dangerous. The danger to the child from excessive uterine contractions is not mentioned except in the remarks on precipitate labor, a quite different matter. In general, however, the rules are in accord with those prescribed for obstetric nurses in this country, although somewhat less definite.

The book seems to be well adapted to the needs of midwives, and can be heartily recommended to such American midwives as wish a thorough course in obstetric theory as well as practice. It would also be of interest and value to trained nurses who wish to specialize in obstetric nursing.

Indispensable Orthopedics. A Handbook for Practitioners. By F. Calot, Chief Surgeon to the Hôpital Rothschild. Translated from the Sixth French Edition by A. H. Robinson, M.D., M.R.C.S., and Louis Nicole. Two volumes. Cloth. Price, $5 per volume. Pp. 1175, with 1,260 illustrations. St. Louis: C. V. Mosby Company, 1915.

These two volumes, as shown by the typography and composition, were evidently printed in France. The illustrations, which include eight fine full page colored plates, form a striking feature of the work. Careful attention is paid to

the details of treatment, particular stress being laid on plaster work. Celluloid work is also carefully considered. Although the method of preparing plaster apparatus varies considerably from that employed by orthopedists in this country, the final construction is probably quite as efficient, and the variation in method will be of interest to those who study it. The text is divided into four parts, with three preliminary chapters on general technic, including plaster and celluloid work, anesthesia and puncture and injection. Part 1 is devoted to acquired tuberculous affections, Part 2 to acquired nontuberculous affections, and Part 3 to congenital orthopedic affections. Part 4 is an appendix devoted to other manifestations of tuberculosis, syphilis, osteomyelitis, etc. The text is intended primarily for the general practitioner who is not a surgeon, but of course will not be without interest to the specialist. The spirit of optimism and faith that, through the author's careful instruction, many of the *bêtes noires* of the orthopedic specialist can be easily and satisfactorily treated by the everyday practitioner, stands out boldly in every page of the book. For instance, on page 826 appears the statement, "Every practitioner, without exception, may treat and cure all the club feet seen in ordinary practice up to 18 or 20 years." So it is with congenital dislocation of the hip, wry neck, the various tuberculous conditions and scoliosis. As to the author's optimism regarding his own skill in treating tuberculosis of the epididymis and male genitals in general—which with a chapter on cervical adenitis hardly corresponds with the American conception of indispensable orthopedics—the following quotation from page 1011 is an illuminating illustration. He says, "I will repeat here that in the last eighteen years we have not seen a single tuberculosis, even suppurating, of the male genital organs, which has not been cured by our treatment, lasting in most cases less than a year." The keynote of his treatment of tuberculous affections, whether of soft parts or of joints, is rest by the seashore, particularly at Berck, and a system of puncture and injections into the tuberculous focus. The latter is his sheet anchor, with the former the most valuable adjunct. He pays no special attention to heliotherapy, and in his treatment of tuberculosis of the spine does not mention Albee's work or methods. The work has the good quality of being very individualistic, representing the author's own views and experiences, with the exception of a chapter on operative treatment of infantile paralyses of the poliomyelitic and the cerebral types, by Vulpius. He appreciates Abbott's work on scoliosis and devotes a number of pages to its description, showing many illustrations of apparently overcorrected scoliotic spines which are becoming so much less frequent with more extended experience in American practice. Finally, in the last line of the last volume, apropos of this and other treatments, appears this sentence, representing the crowning achievement of orthopedic optimism: "So then it is in our power to cure scoliosis." So much for the matter of the text. As to the manner, the translation is quite literal with French diction and English spelling. The word orthopedic is spelled "orthopedic," "orthopaedic" and "orthopoedic," the latter appearing to be the favorite. The syllabification of words broken at the end of the line is abominable, the book showing so many examples like ma-king, extre-mity, requi-red, cons-tructed and remembe-ring, that one gives up in despair or disgust trying to record them. This is not fair to the author. It is earnestly to be hoped that these faults will be corrected in the next English edition.

Shortage of Drugs in South America.—A Brazilian exchange relates that the commercial crisis throughout South America in consequence of "the European conflagration" has affected drugs as well as everything else. Supplies are running short, and they are being eked out by adulteration. Physicians are warned especially against falsification of ether. The Rio de Janeiro Board of Health recently examined 100 specimens of citrate of magnesia, obtained from various pharmacies, and found that only 20 per cent. were free from adulteration of falsification.

Miscellany

Public Health Legislation for 1915

Since January 1, the legislatures in all the states, with the exception of Georgia, Kentucky, Louisiana, Maryland and Mississippi, have been in session. All have adjourned except that of Alabama, which may possibly remain in session for a month or more. The legislatures of Delaware, Montana, Nevada, New Mexico and South Dakota adjourned without enacting any public health legislation. In most of the other states, few public health measures were considered, yet in some states as many as fifty public health laws were enacted. Many of these are of minor importance, but a large mass of important legislation was enacted, including laws regulating the reporting of vital statistics and the practice of medicine, and providing for the organization and administration of the state boards or departments of health. In all, 367 public health measures are reported as passed. A summary of the more important follows:

ARIZONA.—The law for reporting vital statistics was amended to make the secretary of each county board of health the county registrar of vital statistics and to permit county boards of health to appoint local registrars for each district in the county. Fees are to be allowed such registrars for making reports.

ARKANSAS.—Laws were enacted establishing separate boards for the registration of chiropractors and optometrists. The board of health law was amended.

CALIFORNIA.—The medical practice act of 1913 was again amended, principally to authorize the issuing of reciprocity certificates to others than those licensed to practice medicine and surgery, and to add a new section on chiropody, California thus being one of seven states to provide means for licensing chiropodists. The law specifies the number of hours required for preparation for such a license. After 1922, applicants for these licenses must be high school graduates. The number of hours to be required of any applicant under this law was materially reduced.

The laws providing for the registration of nurses, the reporting of vital statistics and the licensing of pharmacists were amended. A law providing for the regulation of dentistry, to establish a state board of embalmers, to amend the measure regulating the sale and use of poisons to make it conform more nearly to the federal narcotic law, to amend the measures for the regulation of the sale and distribution of food and beverages, to regulate the construction of buildings, especially the building of tenement houses in incorporated towns and cities, and a large number of laws of a general nature for the prevention and control of disease were enacted.

COLORADO.—The medical practice act was amended, making chiropractors and midwives subject to the control of the state board of examiners. The law is carefully worded so as not to affect the rights which have accrued to osteopaths under prior laws, although their subsequent control and regulation is provided for. Optometrists and Christian Scientists are specifically excepted. The law has been referred for a referendum vote, and its operation is thus suspended, at least until 1916.

The narcotic law was amended to conform to the federal measure. It simplifies the work of physicians.

CONNECTICUT.—The medical practice act was amended as regards the examination of applicants as to educational and moral qualifications. The revocation of licenses for drug addiction was provided for. The practice of midwifery and chiropody were placed under the jurisdiction of the state board.

The narcotic laws were amended generally, as were also the measures for the regulation of the sale of food and beverages. Among a large number of laws to prevent and regulate disease were measures for the appointment of school physicians, for distribution of antitoxins and for the destruction of mosquitoes.

FLORIDA.—Probably the two most important measures enacted were those providing for the reporting of vital statistics and for the medical supervision of schoolchildren. The vital statistics law conforms very nearly to the model bill of the American Medical Association. It marks a decided advance in public health in Florida. The law for the supervision of schoolchildren provides that county physicians are to be medical inspectors for their respective counties and are to be paid out of the state board of health funds. The state board of health is given the general enforcement of this measure.

Other measures were those for the regulation of hotels, restaurants and lunch counters, as well as places where food is prepared, stored and kept, two laws regulating the construction of water closets and the disposal of sewage generally, and a measure similar to the Louisiana law providing a health train and exhibit.

IDAHO.—The narcotic law was amended to conform to the federal law. A measure was enacted requiring physicians to pay an annual license fee of one dollar, but this was vetoed by the governor.

ILLINOIS.—Among the numerous health measures passed, the more important are: a comprehensive and excellent vital statistics law, based on the model law of the American Medical Association; a tuberculin test law; a school sanitation law; a law for the prevention of infant blindness; a state antinarcotic law, conforming to the federal law; a law for the confinement of feebleminded persons; an amendment to the medical practice act which restores to the state board of health the power to revoke the licenses of practitioners licensed prior to July 1, 1899; a law providing for the establishment of a tuberculosis sanatorium by counties, and a revised law on occupational diseases. Other measures are those making immoral women subject to one year's imprisonment for the purpose of curing them of venereal diseases; prohibiting the shipment of cattle into Illinois, unless tuberculin tested; amending the embalmers' act; empowering the city councils of certain cities and villages to establish and maintain garbage systems, and a law for the protection of laborers from poisonous fumes and dust. An optometry law was also enacted.

INDIANA.—Tuberculosis was made reportable and declared to be an infectious and communicable disease dangerous to public health. The law further provides for the disinfection of infected premises and preventing the renting of such buildings until the law is complied with. Other measures were those providing for the proper sanitation of school buildings, their construction, lighting and the like, the control and regulation of funerals, and for the codification of the public health laws.

IOWA.—Several measures were enacted with reference to the hygiene and proper care of children.

KANSAS.—A law was enacted creating a division of child hygiene and one for the dental inspection of schoolchildren. Other measures were those providing for the protection of drinking water and for the construction and maintaining of sewer systems; forbidding false and misleading advertising; forbidding fee splitting by physicians, and several other measures of minor importance.

MAINE.—Laws were enacted creating a board for the examination and registration of nurses, regulating the sale of habit-forming drugs, and amending the workmen's compensation act. None of these measures differs widely from similar laws in force in other states. The vital statistics law was amended in a minor regard, and a number of laws were enacted of a general hygienic nature, such as those regulating the sale of food, the employment of women and children in factories, and the control of the feebleminded and the insane.

MASSACHUSETTS.—The new laws enacted were of somewhat minor importance, being chiefly for the regulation and control of the sale of various foods. The narcotic law was amended to conform more nearly to the federal narcotic measure, and the medical practice act was also amended, chiefly as to the qualification of applicants for licenses.

MICHIGAN.—A law was passed providing for the regulation of chiropodists, who are placed under the board of registration in medicine. The vaccination and veterinary laws were amended, as were also some of the food and drug laws, with a special regard for milk and milk products. Provision was made for the establishment of branch bacteriologic laboratories, and for the purchase of necessary supplies. The public health laws were amended generally in several particulars, an appropriation of $50,000 being made for the control of tuberculosis.

MINNESOTA.—Tuberculosis and narcotic drugs received careful consideration. Among other measures were those forbidding false and misleading advertising, controlling the sale and manufacture of various foods, providing for railway sanitation, and authorizing the establishment of sewage systems in certain localities. The optometry law was amended so as to cover all who treat the eyes by prescribing glasses.

MISSOURI.—The vital statistics law was amended by providing for fees for the reporting of births and deaths. The law controlling the sale of narcotic and hypnotic drugs was amended to apply to opium, morphin, codein and heroin more specifically. Two measures were enacted for the regulation and control of tuberculosis conforming to similar measures found in other states. A number of laws were passed amending the food and drug laws, to prevent nuisances, to forbid fraudulent advertising and to protect persons working in lead and zinc mines.

NEBRASKA.—A law was enacted giving physicians a lien on any sum which may be due a patient from some other person who may be responsible for such person's injury. One for the regulation and licensing of chiropractors was also enacted.

NEW HAMPSHIRE.—The board of health law was amended to provide for the appointment and regulation of local health officers, for the establishment and regulation of quarantine, and in certain other regards. Laws were enacted for the treatment of persons afflicted with tuberculosis, particularly in the advanced stages, for the control and prevention of infant blindness and to control the insane. Other laws were for the distribution of antitoxin, the sanitation of schoolhouses, to restrict the use of the common towel, and to provide for the efficient administration of hospitals. The medical practice act was amended, but not in any way to differentiate it from other laws of this nature. Other laws specifically regulating physicians were one to prevent false prescribing and one relating to the sale of habit-forming drugs. The food and drugs laws were amended, and a measure was enacted for the regulation of marriages, forbidding the consummation of such a relationship between mental defectives. This law is more like the earlier measures on this subject, and makes no attempt to be so far-reaching as the Wisconsin act of two years ago. Other laws of interest are those relating to pandering and child labor.

NEW JERSEY.—The board of health law was amended by abolishing the present board and creating a department of health in its place. This department is controlled by eight persons appointed by the governor. A director of health is to be chosen by the board. The law is similar to the New York measure. The vital statistics law was amended. Several laws were passed for the control of contagious diseases and the regulation of feebleminded persons. The medical practice act and the laws for the control of osteopathy, nursing, dentistry and chiropody were amended. The principal amendment to the medical practice act related to medical qualifications and defined what constitutes the practice of medicine. The food and drug laws were amended to define adulteration and misbranding and to prevent the spread of diseases through the sale of dairy products, as well as in several minor details. A large number of measures of a general hygienic nature was enacted, such as those for the establishment of public baths and playgrounds, to protect certain workmen, and to control various animal diseases.

NEW YORK.—The public health laws were amended to reorganize local boards of health and to authorize the consolidation of municipalities into health districts. Certain penalties were provided for violations of the sanitary code, and fees were authorized for reporting births and deaths. The vaccination law was amended, making a distinction between cities of the first and second class and all other localities in the state. Under this law, vaccination of schoolchildren is not required outside of cities of the first and second classes, unless smallpox actually exists. An expert testimony law was enacted, amending the judiciary law in relation to the appointment of examining physicians in criminal or special proceedings. The narcotic law was amended to secure greater protection, and an amendment was added to the public health laws to provide for better regulation and inspection of public water supplies.

NORTH CAROLINA.—The board of health and the vital statistics laws were amended, and measures were enacted for the better control and regulation of tuberculosis. Generous appropriations were made for several state institutions.

NORTH DAKOTA.—The laws were amended to provide for the organization of county boards of health and for the appointment and removal of county health officers. The law providing for the medical supervision of schoolchildren was amended by making such supervision mandatory. Laws were also enacted for the regulation and licensing of nurses and chiropractors.

OHIO.—Attention was centered on the medical practice act, effort being directed toward the proper defining of unprofessional conduct, so as to prevent improper advertising and the division of fees or "fee-splitting," and the wording of the act so as to make it clear that it covered any and all forms of healing, with the exception of midwifery and osteopathy. By this amendment the medical board was given the power to supervise all other cults. A nurses' registration bill, a law for the prevention of blindness in the new-born, a law for the prevention of tuberculosis and for the distribution of antitoxin, and several measures to regulate the sale of food and drugs were also passed.

OKLAHOMA.—The board of health was given authority to establish chemical and bacteriologic laboratories for the examination of public water supplies and for the analysis of foods, drugs and medicines. The laws were also amended to provide for a more efficient supervision of the manufacture of foods and for the proper inspection of hotels, lodging and rooming houses and places where foods are prepared and kept.

OREGON.—The vital statistics law was amended to conform more nearly to the model bill, and other laws were enacted for the prevention of blindness in infants and to protect and conserve the purity of municipal and domestic water supplies.

PENNSYLVANIA.—The quarantine laws were amended for the purpose of obtaining greater security from various contagious diseases. The osteopathic law was amended to define what constitutes a reputable school and to determine eligibility of applicants. A law was enacted for the promotion of biologic science and for the discovery of new methods of treatment in medicine and surgery, and for the care and treatment of persons habitually addicted to the use of alcohol or drugs.

RHODE ISLAND.—Some minor changes were made in the law governing the board of health, providing for expenses and for the preparing and publishing of certain statistics. The medical practice act was amended to require certificates to be signed by both the president and the secretary of the board. Other measures were those providing for the disposition of dead bodies and the proper treatment of persons suffering from occupational diseases, and to require the vaccination of schoolchildren, unless certified as unfit subjects for this purpose. Appropriations were made for the proper care and treatment of tuberculous patients, etc. The appointment of medical inspectors for the schools of Providence was authorized, and the food and drug laws were amended in several regards. Several measures were enacted for the protection of persons in various employments and to secure efficient administration of these laws.

SOUTH CAROLINA.—The public health laws were amended to provide for the appointment of local boards of health in cities and towns, to secure the proper control of the insane and to provide the conditions on which graduate nurses of other states may be licensed in South Carolina.

TENNESSEE.—Two measures of interest were enacted, one of which provides for the prevention of blindness in the new-born, and the other amends the medical practice act so as to make it of broader application, more specific in its intent and purpose, and to determine the proper qualifications for licensure.

TEXAS.—Measures were enacted to provide for health districts, to appropriate a certain sum for the prevention of bubonic plague, to provide for the care of crippled children, to prevent the pollution of water courses and to require hotels and other such places to take proper sanitary precautions in the interest of the public welfare.

UTAH.—The public health laws were amended by prescribing the qualifications of the secretary of the state board of health and providing for his salary. A measure was enacted creating a commission for the investigation of the amount of feeblemindedness in the state.

VIRGINIA.—A resolution was adopted to provide a commission for the study of tuberculosis and to defray its expenses.

VERMONT.—The board of health law was amended with regard to the organization and the compensation of the secretary and certain appointees. The laws on controllable diseases were amended, forbidding the marriage of persons infected with venereal diseases and requiring the reporting of such diseases, and providing an appropriation for the care of indigent tuberculous persons. The laws providing for the care of the insane and feebleminded persons were amended. Provisions were made for their care in hospitals. The law providing for the medical supervision of schoolchildren was amended to provide for medical inspectors, designating their duties and providing for the administration of the law by the board of health. Laws were enacted to regulate the erection of school buildings, the sanitation of barber shops and the construction of mausoleums and the like. The medical practice act was amended with reference to the qualifications of the applicants for licenses and the definition of unprofessional conduct. Osteopaths complying with certain requirements are not covered by this measure. The optometry law was amended to forbid fraudulent personation of this profession. The laws for the sale of narcotic drugs were changed to prevent the improper use of such medicines and in some degree to conform to the federal measure. Other laws were those for the reformation of inebriates by their proper confinement and control, the regulation of places where women are employed by compelling the use of chairs, and the establishment of a laboratory of hygiene to aid in the control of infectious bovine abortion.

WASHINGTON.—The vital statistics law was amended by providing for the redistricting of the state outside of certain cities, each district to be in charge of district health officers. The medical practice act was amended to define unprofessional conduct by prohibiting a conspiracy on the part of one physician to obtain money from or injure the reputation of another practitioner. The board of health law was amended by providing for an annual convention of county health officers, as the commissioner of health shall determine.

WEST VIRGINIA.—The principal measure enacted was that reorganizing the department of health. Under this law the board of health was changed into a state department of health, with a commissioner of health at the head, and an advisory board. This council is given the additional duty of supervising the practice of medicine and surgery. Optometrists are exempted from this provision.

WISCONSIN.—The legislature has just adjourned after passing a number of public health measures, notably an amendment to the medical practice act and an optometry law. A detailed sumary of Wisconsin legislation will appear later.

WYOMING.—A law was enacted providing for the medical supervision of schoolchildren. It is made the duty of the schoolteachers to watch the children for defective sight or hearing and diseases of the nose and throat. The state superintendent of public instruction is to provide the rules for the proper guidance of the teachers.

Medicolegal

Tender of Person for Operation to Determine Whether Appendix Had Been Removed

(Hossey vs. Murray et al. (Wash.), 147 Pac. R. 205)

The Supreme Court of Washington affirms a judgment against Mr. Murray and wife for professional services rendered to Mrs. Murray. One item of his account was for "curetting," January 26, and another for a "laparotomy," Feb. 16, 1911. The court says that the defendants charged in a cross-complaint that the plaintiff was employed, on the latter date, to operate on Mrs. Murray for appendicitis, and for no other purpose, but that, without authority, he removed her ovaries and fallopian tubes, which operation was not necessary and not justified by her condition. The primary issue in the case as tried was whether the operation performed February 16 was authorized. The evidence introduced by the plaintiff was to the effect that the curetting was made necessary by an attempt of Mrs. Murray to perform an abortion on herself by the use of a catheter, as she admitted to the plaintiff and to a number of other witnesses who testified; that before the laparotomy operation was performed, Mrs. Murray was told that she would probably lose both fallopian tubes, and said to go ahead and remove everything that was diseased; that a median incision was made just below the navel, and, when examined, both fallopian tubes were found to contain pus and the ovaries were found to be diseased; that Mr. Murray was then called into the room and advised that if the ovaries were not removed they would give Mrs. Murray constant trouble, and he said to remove whatever was necessary; that the appendix was not removed. The trial of the case began Sept. 12, 1913, and, on the 16th, while the case of the defendant was being presented, counsel for the plaintiff moved the court to appoint a commission of three physicians to examine Mrs. Murray as to her physical condition, whereupon counsel for the defendants said that he would tender Mrs. Murray to two physicians and another one that he named for an examination as to whether her appendix had been removed, stating that he was very sure it had, and that he had been authorized to make this tender of her for an operation to determine that fact. Subsequently, during the same day, Mrs. Murray, while on the witness stand, when asked whether she was willing to submit her body to an operation to determine whether the appendix had been removed, replied that she was. The Supreme Court holds that the trial court rightly declined to direct the commission appointed by him to perform the operation because of lack of power. After the verdict for the plaintiff, and a motion for a new trial, defendants' counsel advised counsel for the plaintiff that Mrs. Murray had employed a physician to perform an operation to determine whether her appendix had been removed, and that three other physicians would assist; that the plaintiff or any representative of his might be present, but plaintiff's counsel said they would not care to have a physician present. Two of those physicians made affidavit that the appendix "had been removed some time previously by a surgical operation," and two of them stated: "We found that there was no appendix there." The Supreme Court does not think that a new trial should be granted. Had the question not been raised on the trial in any form, and subsequently, in the ordinary course of affairs, an operation had been performed, and the fact disclosed while the motion for a new trial was pending, a different question would have been presented. If it were a reasonable and proper thing to tender Mrs. Murray for the operation, it would have been equally reasonable that the defendants, claiming that the appendix had been removed, should ask a continuance of the trial in order that they might determine such fact. Nor was there error in permitting evidence to be introduced relative to the fact that Mrs. Murray had told the plaintiff and other witnesses who testified that she had used a catheter in attemping to perform an abortion.

Injudicious Exercise Proximate Cause of Injury

(Kill vs. Industrial Commission et al. (Wis.), 152 N. W. R. 148)

The Supreme Court of Wisconsin affirms a judgment confirming an order of the commission dismissing the application of the plaintiff for compensation from a packing company by which he had been employed as a tinsmith. The court says that, on the sixteenth of the month, he accidentally cut his left wrist. The company sent him to a physician, who treated him. On the twenty-fifth, the wound was practically healed, and the physician discharged him as cured. On Saturday evening, the twenty-sixth, he engaged in a boxing match, and on the following Monday night suffered pain in his wrist. On the following day his wrist was found to be infected, and finally he lost the bones of the hand and wrist, incapacitating him from following his trade. The commission found, among other things, from the evidence before it, that the wrist became infected at the time of the injury on the sixteenth, through the introduction of poisonous bacteria, known as streptococci. Through Nature's process these germs were walled off and did no damage at first. This was because the patient was strong enough to resist the attack of the bacteria. Had he not entered the boxing bout, in the course of time the bacteria would have been expelled from the system without harmful results. But the strenuous exercise of the boxing bout had the effect of "lighting up" or stirring into activity the poisonous germs, and at the same time lessening the resisting power of the plaintiff, resulting in the active poisoning of the arm. The physician advised him, at the time of his discharge, on the twenty-fifth, not to enter the bout; that it might do harm, and it might not—it would be impossible to say. The contention of the plaintiff was that his final disabled condition was the proximate result, within the meaning of the statute, of the injury received by him while in the course of his employment by the packing company. But it seems clear to the court, from the findings supported by evidence, that the injury to the plaintiff, while in the employ of the packing company, was not the proximate cause of the present disability. That injury had been healed and cured, sufficiently at least that, had it not been for the bout voluntarily entered into with knowledge of the danger, the injury complained of would not have occurred. The commission, therefore, was justified in finding that the bout proximately caused the injury complained of. The injury must be proximately caused by the accident, and not self-inflicted, according to the statute, to entitle to damages.

Society Proceedings

COMING MEETINGS

Amer. Assn. of Obstetricians and Gynecologists, Pittsburgh, Sept. 14-16.
American Electro-Therapeutic Association, Atlantic City, Sept. 14-16.
American Public Health Association, Rochester, N. Y., Sept. 7-10.
American Roentgen Ray Society, Atlantic City, Sept. 22-25.
Association of Military Surgeons of the U. S., Washington, Sept. 13-15.
Colorado State Medical Society, Denver, Oct. 5-9.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Indiana State Medical Association, Indianapolis, Sept. 23-24.
Kentucky State Medical Association, Louisville, Sept. 21-23.
Michigan State Medical Society, Grand Rapids, Sept. 1-2.
Minnesota State Medical Association, Rochester, Sept. 29-Oct. 1.
Missouri Valley Medical Society, Des Moines, Sept. 23-24.
New Mexico Medical Society, E. Las Vegas, Sept. 6-8.
Oregon State Medical Association, Portland, Sept. 9-10.
Pennsylvania State Medical Society, Philadelphia, Sept. 20-23.
Utah State Medical Association, Salt Lake City, Sept. 28-29.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

August 1, XXXVIII, No. 2, pp. 163-312

1 Preservation of Life of Frog's Egg and Initiation of Development, by Increase in Permeability. J. F. McClendon, Minneapolis.
2 Action of Anesthetics in Preventing Increase of Cell Permeability. J. F. McClendon, Minneapolis.
3 New Hydrogen Electrodes and Rapid Methods of Determining Hydrogen Ion Concentrations. J. F. McClendon, Minneapolis.
4 Direct Reading Potentiometer for Measuring Hydrogen Ion Concentrations. J. F. McClendon, Minneapolis.
5 *Acidity Curves in Stomachs and Duodenums of Adults and Infants. J. F. McClendon, Minneapolis.
6 Perfusion of Mammalian Medulla: Effect of Calcium and of Potassium on Respiratory and Cardiac Centers. D. R. Hooker, Washington, Md.
7 Interpretation of Membrane Manometer Curves as Affected by Variations in Blood Pressure. J. D. Pilcher, Cleveland.
8 Studies on Hydrogen-Ion Concentrations in Blood Under Various Abnormal Conditions. M. L. Menten and G. W. Crile, Cleveland.
9 *Origin of Antithrombin. G. P. Denny and G. R. Minot, Boston.
10 *Chemistry of Normal Human Gastric Juice. A. J. Carlson, Chicago.
11 Content of Sugar in Blood of Cats Under Influence of Cocaine. E. W. E. Schear, New York.
12 *Digestion Contractions of Filled and Hunger Contractions of "Empty" Stomach. F. T. Rogers and L. L. J. Hardt, Chicago.
13 *Physiology of Lactation. W. L. Gaines, Chicago.

5. **Acidity Curves of Stomach and Duodenum.**—According to McClendon the acidity of the adult stomach rises rapidly during the first one and one-half to three hours after a meal, after which it remains stationary until the food has nearly all left the stomach. The rapidity of rise is less the heavier the meal and the more the protein it contains, but it seems also to depend on the efficiency of the individual stomach. The height to which the acidity rises is a personal characteristic. The adult duodenal contents are slightly alkaline. The hydrogen ion concentration is about 0.00000002. The acidity of the infant's stomach (of the first month) rises slowly during the time from fifteen minutes to one hour after nursing, after which it rises rapidly until the stomach is empty. Four hours after nursing it may be as acid as the adult stomach. The acidity is sufficient to activate the pepsinogen, but there is so little milk left in the stomach after the acidity has risen half way that the peptic digestion in the stomach seems unimportant. The infant's duodenum is more acid than the average acidity of the stomach. Pepsin is always present and peptic digestion must take place.

9. **Origin of Antithrombin.**—That antithrombin is formed in the liver is the conclusion reached by Denny and Minot. They found that venous blood taken from the liver, spleen, kidneys and intestines shows no appreciable difference from jugular vein blood in antithrombin content. When stasis is produced in these organs the liver blood alone shows a definite increase in antithrombin. Perfusion of the liver with defibrinated blood causes an increase of antithrombin in the perfusate. Perfusion of the head, spleen and hind leg shows no marked increase and generally a decrease in the antithrombin content. Attempts to stimulate the liver to production of antithrombin by means of bile, bile salts, secretin and electrical stimulation were negative. Injection of small amounts of thrombin into the portal circulation caused a slight rise in antithrombin. Dogs with phosphorus poisoning and liver destruction show a very marked decrease in antithrombin content of the blood as well as diminished fibrinogen.

10. **Chemistry of Normal Human Gastric Juice.**—Carlson reports in detail the results of his investigations made on two human subjects, in one case a gastric fistula with complete cicatricial stenosis of the esophagus and in the other a dilated cicatrix. The results are in agreement with the work of Pawlow and his pupils on dogs, and the work of previous observers on pure gastric juice of normal persons. Normal human gastric juice (appetite secretion) when secreted above a certain minimum rate shows a practically constant total acidity of nearly 0.5 per cent. hydrochloric acid, or the same as the gastric juice of normal dogs. The gastric juice (appetite as well as hunger juice) secreted by the normal stomach at a low rate shows lower than normal acidity and total chlorids. The view of Pawlow based on experiments on dogs that gastric juice is secreted at uniform and constant acidity is true for man only in regard to appetite, digestion and hunger juice secreted at fairly high rate.

Carlson directs attention particularly to the fact that normal human gastric juice is equal in total acidity to the maximum acidity reported by clinical observers for so-called hyperacidity in man, and that there is no evidence that the gastric glands under any pathologic conditions are able to or do secrete a juice of higher than normal acidity. Moreover, the presence in the stomach of gastric juice of full acid strength leads by itself and immediately to no untoward symptoms. The contents of the "empty" stomach, and the continuous or hunger secretion (when the secretion rate is low) have uniformly a lower acidity than the appetite juice. The total acidity of contents of the "empty" stomach is about 0.2 per cent.; a figure frequently given, especially by clinicians, as the acidity of pure gastric juice of normal persons. The acidity of the continuous or hunger secretion is higher, and the greater the secretion rate the higher the acidity, until it may equal that of the appetite juice. In no instance does the acidity of the continuous secretion exceed that of the appetite juice.

12. **Contractions of Empty and Full Stomach.**—Rogers and Hardt claim that both in man and in the dog, the fundic end of the stomach, during the normal digestion, exhibits a slow tonus rhythm of from one to three minutes' duration. During the emptying of the stomach and the onset of the hunger period, this tonus rhythm becomes more vigorous. In the dog after thirty-six hours' starvation the stomach is markedly hypertonic; a vigorous hunger contraction is a contraction of the fundus as a whole. In man after fifteen hours' starvation the hunger contractions are vigorous peristaltic contractions in groups of two to four, superposed on the slow tonus rhythm. They begin at the cardiac end of the stomach and sweep over the whole stomach. A given inhibiting agent does not necessarily have the same effect on the different types of gastric contractions; thus the pyloric peristalsis is the most resistant to reflex inhibiting influences; fundic peristalsis is least resistant, while the tonus rhythm occupies a position between the two.

13. **Physiology of Lactation.**—Gaines found that transfusion of blood from a pregnant goat into a lactating one temporarily inhibits milk secretion. Placental and mammary gland extracts from a pregnant cow have an effect similar to the blood. There is some indication of a subsequent accelerating action in the case of the gland extract. Transfusion of blood from a fresh, heavy-milking goat into a low-milking one fails to accelerate milk secretion. Pituitrin has a muscular action on the active mammary gland causing a constriction of the milk ducts and alveoli with a consequent expression of milk. This action holds, also, on the excised gland in the absence of any circulation. The flow of milk produced by pituitrin is dependent on the amount of milk present in the gland.

There is no evidence of any true secretory action. The nonlactating gland, up to a late stage of pregnancy, is not sensitive to pituitrin. Nursing, milking, and the insertion of a cannula in the teat, excite a reflex contraction of the gland musculature and expression of milk. There is a latent period of from thirty-five to sixty-five seconds. Milking is a stronger excitant than the cannula; nursing is stronger than milking [and the direct action of pituitrin (in some cases) is stronger than nursing]. Removal of milk from the gland is dependent on this reflex, and it may be completely inhibited by anesthesia. The adequate stimulus for the receptor in the reflex arc is the thermal and mechanical effects of nursing; but the strength of the excitation thus aroused is profoundly modified by the psychic state of the mother—especially striking are anesthesia, which greatly weakens it, and recovery of the young after separation, which greatly strengthens it.

The internal capacity of the mammary gland of the goat is greater than the volume of milk drawn at one time, and the udder shrinks in volume during milking to nearly the

same extent as the volume of milk drawn. Practically all the milk drawn is present at the beginning of the milking, and is actively ejected by a reflex contraction of the gland musculature under the stimulus of milking. Passing milk through filter paper separates it into fractions of different fat content, somewhat similar to fore-milk and strippings. A physical filtration may account, at least in part, for the rise in fat content of the milk with progress in milking.

American Journal of Public Health, Boston

July, V, No. 7, pp. 593-686

14 Some Physical Characteristics of Male Garment-Workers of Cloak and Suit Trades, Based on 2,107 Physical Examinations. J. W. Schereschewsky, U. S. P. H. Service.
15 Methods of Bacterial Air Analysis. G. L. A. Ruehle, Geneva, N. Y.
16 Statistical Treatment of Stillbirths. F. V. Beitler, Halethrop, Md.
17 Main Points of Attack in Campaign for Public Health. C. W. Eliot, Boston.
18 Scope of Nurse in Public Health Work. E. P. Crandall, New York.
19 Conservation of Life at Middle Age. I. Fisher, New Haven, Conn.
20 What Massachusetts Has Done and May Do for Public Health. W. T. Sedgwick. Boston.
21 Control of Communicable Diseases. E. R. Kelley, Seattle.
22 Relationship between State and Local Boards of Health. L. A. Jones, North Adams.
23 Health of Farmer. J. S. Hitchcock, Northampton.
24 Vacation Health Problems. A. S. MacKnight, Fall River.
25 Continuing Problem of Vaccination. S. H. Durgin, Duxbury.
26 Control of Cancer. E. Reynolds, Boston.
27 Some Problems of Health Officer of Small City. F. G. Curtis, Chestnut Hill.
28 Infant Mortality from Standpoint of State. W. H. Coon, Haverhill.

Boston Medical and Surgical Journal, Boston

August 5, CLXXIII, No. 6, pp. 187-224

29 *Treatment of Eczema with Special Reference to Use of Vaccine and Part Played by Bacteria in Its Etiology. Report of Fifty Cases. L. S. Medalia, Boston.
30 Variations in Sensory Threshold for Faradic Stimulation in Psychopathic Subjects. II. Manic Depressive Insanity. G. P. Grabfield, Boston.
31 Id. III. Dementia Praecox Group. G. P. Grabfield, Boston.

29. **Treatment of Eczema.**—Medalia's paper is based on a study of fifty-one cases of most protracted types of eczema. Practically all of these cases failed to respond to the ordinary methods of treatment, and the patients applied for vaccine treatment as a last resort. All but fourteen of these patients have been treated with autogenous vaccines. Cultures were obtained in the usual way, using a number of swabs. The material was collected from unopened vesicles and crusts, from pustules and scales. The cultural findings in the 51 cases of eczema to be reported were as follows: 34 cases showed *Staphylococcus aureus* in pure culture; 2 cases showed *Staphylococcus aureus* mixed with *Staphylococcus albus;* 6 cases showed *Staphylococcus aureus* mixed with streptococcus; 3 cases were found sterile; in 6 cases no cultures were taken. It was found early in the application of this method of treatment in eczema that autogenous vaccines were necessary, and a still more important point was the need to administer what would be considered, ordinarily, tremendous doses up to 6,000 million organisms or over, in one dose. Otherwise there would be no noticeable change in the condition clinically nor would there be much local reaction.

The results obtained in these 51 cases can be summarized as follows: Cured, 43 patients. Of these there were 8 that had one or more recurrences, which yielded readily to from two to four treatments of their autogenous vaccine. Improved, 6 patients; no improvement, 1; results unknown, 1. The minimum number of treatments was 3; maximum, 41. Minimum duration of treatment, two weeks; maximum, twelve and one-half months. Forty-five of the 51 cases were of the vesicopustular and weeping variety. The remaining 6 were of the dry and scaly type. Two of the 6 were improved. Four were cured. Medalia advises that the general condition, food idiosyncrasies, habits and occupation of each patient should be carefully studied in order to eliminate, if possible, the exciting causes of the dermatitic lesions. Ointments, powders and other topical applications, though temporary in their effect, are necessary adjuncts to the vaccine treatment to protect the raw skin and help to relieve the patient's discomfort. The use of large doses—6,000 million organisms or over—of the autogenous staphylococcus vaccine was found necessary for the successful treatment of this disease.

Delaware State Medical Journal, Wilmington

July, VI, No. 8, pp. 1-24

32 Ileus; With Special Reference to Some Acute Forms. J. H. Baldwin, Philadelphia.

Illinois Medical Journal, Chicago

July, XXVIII, No. 1, pp. 1-80

33 Mechanism of Exhaustion. F. P. Norbury, Springfield.
34 Infections of Epididymi with Their Surgical Treatment. I. S. Koll, Chicago.
35 Treatment and Prognosis of Syphilis of Nervous System. R. C. Hamill, Chicago.
36 Principles Underlying Treatment of Septic Peritonitis. J. E. Allaben, Rockford.
37 Traumatism as Etiologic Factor in Pulmonary Tuberculosis. J. W. Pettit, Ottawa.
38 Civil Liability of Physician for Malpractice. J. H. Miller, Pana.
39 Painful Manifestations of Myocardial Disease. L. C. Taylor, Springfield.
40 Unusual and Interesting Case of Carcinoma of Omentum. C. J. Whalen, Chicago.
41 Cancer Death Rate Increase in Chicago. H. G. Ohls, Chicago.

Medical Record, New York

August 7, LXXXVIII, No. 6, pp. 215-256

42 Lymphangioma and Radium. R. Abbe, New York.
43 *Roentgen Ray Treatment of Ringworm of Scalp. G. M. Mackee, and J. Remer, New York.
44 Peace and War Footing of Alcohol. E. H. Williams, Los Angeles.
45 Tuberculosis in Children. W. W. Riha, Bayonne, N. J.
46 *Influence of Autolytic Products on Tumor Growth. G. L. Robdenburg and F. D. Bullock, New York.
47 High Calory Diet in Typhoid. K. E. Kellogg, New Britain, Conn.

43. **Roentgen-Ray Treatment of Ringworm of Scalp.**—MacKee states that the use of the Roentgen ray in tinea tonsurans is based on its ability to cause a defluvium—to make the hair fall out. The ray does not have a destructive effect on the fungus, although it is possible that in some way it so modifies the soil that the organism finds a less favorable medium on which to grow. In any event, most of the spores are removed with the hair and those remaining disappear or are destroyed by the use of antiparasitic remedies before the hair regrows, at the end of about three months. In general there are two ways in which the Roentgen ray can be employed for this purpose—namely, the divided dose and the massive or intensive dose methods. With very few exceptions the former is the procedure used in this country, while in Europe the latter method has been employed since it was advocated by Sabouraud and Noiré in 1904.

The older method (divided dose) precludes accurate direct measurements and cannot be employed to produce a defluvium of the entire scalp, at least not without considerable danger. Its use, therefore, is limited to the individual treatment of one or more areas. Even here the result is uncertain and unsatisfactory. With the older technic, permanent alopecia may occur even in the absence of a preceding erythema. On the other hand, if this amount is divided into eight treatments which are administered twice weekly, depilation will not result. The details of the method as employed by the author are described.

46. **Influence of Autolytic Products on Tumor Growth.**—An invasive rapidly growing medullary carcinoma, was the neoplasm used by Rohdenburg and Bullock in their work. Fourteen days after subcutaneous tumor inoculation, mice in groups of ten were given daily injections of 0.25 c.c. of 1 per cent. solution or suspension of one of the various products (a dosage equal to 9 gm. per diem for a 150-pound man). These injections were given subcutaneously in a region of the body remote from the tumor, and were continued for fourteen days. At the end of this period of observation the mice were killed and several tumors of each group were examined microscopically. The experiments failed to show any inhibition of tumor growth when the chemical products of autolysis are used. In particular, nucleinic acid, derived from animal cells, and protonuclein are without effect on the malignant tumors in mice; their therapeutic use in human cases can be expected to produce nothing but the psychic exaltation common to the use of every new remedy.

New Jersey Medical Society Journal, Orange

July, XII, No. 7, pp. 313-364

48 What Surgery Is and Should Be. G. K. Dickinson, Jersey City.
49 Diagnosis and Treatment of Carcinoma of Stomach. G. Woolsey, New York.
50 Diagnosis of Cancer of Pancreas—Mistake. J. Payne, Midland Park.

New Mexico Medical Journal, Las Cruces

July, XIV, No. 4, pp. 97-128

51 Plea for General Instruction in Practical Hygiene. H. R. Flanders, Las Cruces.
52 Infections of Kidney. C. M. Yater, Roswell.

New Orleans Medical and Surgical Journal

July, LXVIII, No. 1, pp. 1-76

53 Necessity for Educational Campaign for Control of Cancer. C. J. Miller, New Orleans.
54 Precancerous Stage; Predisposing Causes of Cancer, Including Hereditary Influence. W. H. Harris, New Orleans.
55 Skin Conditions Which Lead to Cancer. I. Dyer, New Orleans.
56 Early Signs of Cancer of Womb. E. S. Lewis, New Orleans.
57 Cancer of Stomach. E. D. Martin, New Orleans.
58 Use of Percy Cauterization and Internal Iliac Ligation, as Preliminary Step to Wertheim Hysterectomy. S. M. D. Clark, New Orleans.
59 Radical Operation (Wertheim) for Carcinoma of Uterus. W. Kohlmann, New Orleans.
60 Limitations of Use of Radium in Cancer of Uterus. C. J. Miller, New Orleans.
61 Cancer of Larynx. H. Dupuy, New Orleans.
62 Experimental and Vivisectional Researches, with Minute Chemical and Pathologic Observations. F. Gaertner, Pittsburgh.

New York Medical Journal, New York

August 7, CII, No. 6, pp. 273-328

63 Mouth Hygiene. E. L. Fisk, New York.
64 Teeth and Their Relation to Health. S. Seilikovitch, Philadelphia.
65 Mouth Infections; Their Cause, Treatment, and Systemic Effect. A. H. Merritt, New York.
66 Pyorrhea Alveolaris as Cause of Systemic Disturbances. A. E. Fossier, New Orleans.
67 Pyorrhea Alveolaris. F. E. Stewart, Philadelphia.
68 Relationship Between Dentist and Physician. W. B. Dunning, New York.
69 *Form of Diabetic Coma, Not Due to Acetone Bodies. J. Rosenbloom, Pittsburgh.
70 Scopolamin and Morphin in Obstetrics and Surgery. R. T. Gillmore, Chicago.
71 Importance of Rectal Examination. H. A. Brav, Philadelphia.
72 Cystitis in Women. L. W. Bremerman, Chicago.
73 Rôle of Dentist in Therapeutics of Internal Diseases. R. S. Robertson, New York.

69. **Form of Diabetic Coma.**—Three cases of diabetic coma studied by Rosenbloom were all of the severe type, with no tolerance for carbohydrate, and with a restricted protein intake there was no lessening of the glucose output. They were studied for a period which varied from one week to two months. During this time the urine contained a normal amount of ammonia-nitrogen and showed no trace of acetone, diacetic acid or beta-oxybutyric acid. There was no evidence of any kidney disease. The urine contained excessive amounts of colloidal nitrogen, neutral sulphur, and amino-acids. Death occurred in typical diabetic coma. In the last case studied 200 c.c. of blood were taken shortly before death. Only faint traces of acetone, diacetic acid and beta-oxybutyric acid were found. The nonprotein nitrogen of the blood serum was normal in amount. This case is especially interesting on account of the fact that about fifty hours before death, showers of granular casts were present in the urine. The urine was cloudy, owing to the presence of such an enormous number of casts. An intravenous injection of 600 c.c. of 6 per cent. sodium bicarbonate produced a marked improvement in the symptoms.

Rosenbloom believes that his observations show the necessity for changing our views relative to the exciting factors present in all cases of diabetic coma. The inadequacy of the alkaline therapy, he says, can be explained on the basis that the acetone bodies are not the important factors in the causation of the symptoms in all cases of diabetic coma, but that more attention must be paid to the study of the excretion of amino-acids, polypeptids, and certain unknown substances, in this disease.

Ophthalmic Record, Chicago

July, XXIV, No. 7, pp. 331-384

74 New Hand Campimeter. L. C. Peter, Philadelphia.
75 Wide-Aperture Lenses—Punktals and Katrals. C. F. Prentice, New York.
76 Hypertrophy of Conjunctiva; Case Report. W. T. Shoemaker, Philadelphia.
77 Syphilis of Conjunctiva—Fibroma of Orbit. G. H. Mathewson, Montreal, Canada.
78 Case of Gonorrheal Iritis Following Traumatism. R. S. Lamb, Washington, D. C.
79 New Retractor for Extirpation of Tear Sac Operation, Exterior Frontal Sinus Operation and Infant Mastoid Operation. D. T. Vail, Cincinnati.
80 Congenital Aphakia. W. F. Hardy, St. Louis.
81 Three Cases of Monocular Blindness Due to Sinus Obstruction with Recovery of Vision. J. A. Brophy, Philadelphia.
82 Case of Bilateral Subconjunctival Hemorrhage Apparently Due to Centrifugal Force. A. A. Bradburne, Manchester, England.

Pennsylvania Medical Journal, Athens

July, XVIII, No. 10, pp. 765-846

83 Organization of National and Local Forces in Campaign Against Cancer. C. E. Lakeman, New York.
84 Primary Carcinoma of Tonsil; Report of Cases. J. B. McMurray, Washington.
85 What Do Nonoperative Methods Offer in Treatment of Malignant Diseases of Skin. F. C. Knowles, Philadelphia.
86 Deep Roentgen Therapy. G. E. Pfahler, Philadelphia.
87 Recent Progress in Surgery. J. S. Rodman, Philadelphia.
88 Value of Early Diagnosis of Cancer. W. O. Sherman, Pittsburgh.
89 Opportunity of Large Clinics in Campaign Against Cancer. J. M. Wainwright, Scranton.
90 Dormancy of Cancer Infection. E. O. Kane, Kane.
91 Far-Advanced Malignant Disease. J. H. Gibbon, Philadelphia.
92 Hemorrhage from Nose and Throat. G. Fetterolf, Philadelphia.
93 Health Measures Affecting Factory Employees; Some Remarks on Medical Phases of Such Legislation. J. E. Tuckerman, Cleveland.
94 Digestive Tract, Factor in Health and Disease. J. A. Campbell, Williamsport.
95 Fundamentals of Cancer. J. C. Sullivan, Dubois.
96 Results of Recent Propaganda of Cancer Control. J. C. Bloodgood, Baltimore.

Philippine Journal of Science, Manila

March, X, No. 2, pp. 99-176

97 *Experimental Treatment of Human Beriberi with Constituents of Rice Polishings. R. R. Williams and N. M. Saleeby, Manila.
98 *Thymus Gland in Beriberi. R. R. Williams and B. C. Crowell, Manila.
99 Practical Experience with Some Enriching Media Recommended for Bacteriologic Diagnosis of Asiatic Cholera. O. Schöbl, Manila.
100 *Experiments on Immunization of Guinea-Pigs by Inoculation of Avirulent Tubercle Bacilli in Agar. M. A. Barber, Manila.
101 Test of Coccobacillus Acridiorum d'Herelle on Locusts in Philippines. M. A. Barber and C. R. Jones, Manila.

97. **Treatment of Human Beriberi.**—In ten cases of beriberi reported by Williams and Saleeby, 0.1 gm. of allantoin was administered from 3 to 6 times daily. It had a beneficial effect in certain cases but never amounting to a cure. The allantoin was prepared synthetically by the oxidation of uric acid with potassium permanganate. Hydrolyzed extract of rice polishings used in 8 cases in from 1 to 3 c.c. doses, three times daily, benefited all the types of beriberi on which it was tried. The authors claim that it can be of practical service, but should be used only in cases under the direct supervision of physicians and nurses. Unhydrolyzed extract of rice polishings used in six cases is said to be a safe and valuable remedy for infantile beriberi, but of little use for older cases.

As a whole, the observations on the twenty-seven cases recorded in this paper in their bearing on the etiology of beriberi are in accord with the broad proposition that the disease, in a practical sense at least, results primarily from a poor diet, deficient more particularly in specific substances of the nature of Funk's vitamins. The fact that so-called beriberi cases of whatever type respond in a greater or less degree to the same treatment would indicate that they are in reality one and the same disease. The authors believe that practically all the neuritis which is very prevalent among Filipinos, except, of course, a comparatively small percentage of cases for which some other well-known cause is assignable, may safely be regarded as beriberi.

98. **Thymus Gland in Beriberi.**—Williams and Crowell record some observations made in the course of other work, as to the atrophy of the thymus in cases of beriberi. In four beriberic pigeons which had been fed on white rice the thymus had completely disappeared in every case. Examining sixteen chickens in which polyneuritis had developed as a result of a white rice diet, it was found that the thymus had completely disappeared in seven cases, was considerably atrophied in five other cases, and apparently was slightly, if at all, altered in the remaining four. That this atrophy is not due simply to the age of the birds is shown by the fact that it took place in half-grown as well as in full-grown fowls. No relationship could be established between the atrophy of the thymus and the length of the incubation period or the duration, severity or specific symptoms of the disease. Four chickens which had been fed on milk and white rice for varying periods in the course of another experiment were examined after death. These chickens developed evidence of neuritis and were killed. Their sciatic nerves showed microscopic evidences of degeneration in Marchi preparations. The thymus of one fed with autoclaved milk and white rice was small. The thymus glands of the other three chickens which were fed on whole fresh milk and white rice were large.

Two fowls were fed on white rice with an addition of 10 mg. of dried sheep's thymus daily. It was estimated that the quantity of thymus tissue ingested during the normal period of incubation would be the same as that normally present in young fowls. This small amount of tissue noticeably retarded, but did not prevent the onset of the disease. Two fowls were fed on white rice with a daily dose of the alcoholic extract of 1.5 gm. thymus gland. Here again the protection was not complete, although the loss in weight and the onset of the disease were retarded. Two fowls were fed in the same manner, but with a daily dose of the extract of 3 gm. of thymus with less protective results. For comparison, two fowls were fed on white rice and 2 mg. of uracil daily. One contracted chicken cholera, the other was apparently partially protected by the uracil. Five fowls suffering from polyneuritis were treated with hydrolyzed extract of thymus gland in doses of from 5 to 50 gm. of the gland. No cures were obtained. Two human cases of beriberi were treated with small quantities of thymus and a slight improvement was shown in each case. This improvement did not continue after the first few days of treatment, and the patients at the close of the treatment still showed the characteristic symptoms of the disease, although in a less distressing form. The dose was 0.3 gm. of dried sheep's thymus six times daily. No change was made in the diet of the patients.

100. **Experiments on Immunization.**—Five series of guinea-pigs or monkeys were inoculated by Barber with the spleen pulp of lepers taken at postmortem. Lesions of tuberculosis or lesions very similar to those of tuberculosis developed in two of these series. In one of the two series only a part of the pigs developed tuberculosis. In one series one guinea-pig out of five showed lesions, possibly those of tuberculosis. A series of guinea-pigs inoculated with a strain of tuberculosis of leper-spleen origin exhibited at postmortem a remarkable enlargement of the spleen. The average ratios of the spleen weight to the body weight at postmortem were nearly double the average ratios of a series dying of tuberculosis of human sputum origin.

South Carolina Medical Association Journal, Anderson

July, XI, No. 7, pp. 204-236

102 Cancer of Female Genital Organs. J. R. Young, Anderson.
103 Importance of Early Diagnosis of Uterine Cancer. C. R. May, Bennettsville.
104 Organization of National and Local Forces in Campaign Against Cancer. C. E. Lakeman, New York.
105 Cancer. J. A. Faison, Bennettsville.
106 Cancer. A. E. Baker, Charleston.
107 Some Medical Needs of South Carolina. G. E. Thompson, Inman.
108 Avoidance of Shock During Surgical Operations. L. Guerry, Columbia.
109 Infected Individual Public Danger and Public Problem. G. F. Klugh, Cross Hill.

Surgery, Gynecology and Obstetrics, Chicago

August, XXI, No. 2, pp. 135-267

110 *Tumors of Bladder with Special Reference to Technic and Post-Operative Results. B. A. Thomas, Philadelphia.
111 *Fulguration in Treatment of Bladder Tumors. J. T. Geraghty, Baltimore.
112 Surgery of Urinary Bladder. L. E. Schmidt, Chicago.
113 Desiccation Treatment of Bladder Tumors. E. L. Keyes, Jr., New York.
114 *Radium Versus Surgery in Treatment of Vesical Neoplasms. J. B. Squier, New York.
115 *Pathologic Diagnosis of Tumors of Bladder with Particular Reference to Papilloma and Carcinoma. L. Buerger, New York.
116 Stricture of Deep Urethra Simulating Prostatic Obstruction. J. H. Cunningham, Jr., Boston.
117 Different Types of Fibrous Obstruction of Bladder Outlet and Their Treatment. C. H. Chetwood, New York.
118 Prostatic Obstruction without Hypertrophy. B. Tenney, Boston.
119 Goldschmidt and Wossidlo Technic in Handling Obstructions at Vesical Neck. C. M. Harpster, Toledo, Ohio.
120 Clinical Types of Prostatic Obstruction and Their Surgical Treatment. H. A. Fowler, Washington.
121 Contraindications to Surgical Intervention in Obstruction at Vesical Neck. B. Lewis, St. Louis.
122 Vesical Obstruction by Diseased Seminal Vesicles. W. T. Belfield, Chicago.
123 *Frequency of Recurrence of Stone in Kidney After Operation. H. Cabot and E. G. Crabtree, Boston.
124 Some Details in Surgical Treatment of Tumor of Bladder. G. W. Warren, New York.
125 Insufficiency at Ureterovesical Junction. H. L. Kretschmer and J. R. Greer, Chicago.
126 *Anatomy of Imperfectly Descended Testes. A. C. Wood, Philadelphia.
127 Congenital Ectopic Kidney and Hydronephrosis on Left Side, with Normal Kidney on Right. A. G. Brenizer, Charlotte, N. C.
128 Operative Treatment of Salpingitis. M. T. Goldstine, Chicago.
129 Vacuum Apparatus for Suprapubic Drainage. E. G. Davis, Baltimore.
130 Dilatation of Ureteral Fistulae. W. W. Townsend, Rutland, Vt.
131 Acute Torsion of Right Interabdominal Spermatic Cord, Symptoms of Which Simulate Acute Appendicitis. R. C. Cupler, Chicago.
132 Prolapse of Uterus of Unusual Origin. J. R. Judd, Honolulu.
133 New Operation for Colon Exclusion. A. B. Small, Dallas, Texas.

110. **Tumors of Bladder.**—Of the twenty-two cases tabulated by Thomas, 50 per cent. of the patients are dead. Of these eleven cases, nine were pronounced inoperable when first seen, except as a palliative measure; of the remaining two one was cauterized suprapubically instead of being subjected to a partial cystectomy, the other refused operation. It is notable that the patients with carcinoma (excepting the papillary form) have invariably died. Of those who died, only one patient lived longer than a year after his treatment or cystoscopy. Six patients had been previously operated on, five of whom at the time of their first cystoscopy had pronounced carcinomatous recurrence. Each patient with papilloma or cyst—with one exception in which probably a false diagnosis was made—is living and well. Two cases exhibited recurrences after treatment by the high-frequency current. In one of these, the papilloma reappeared three times, but the growth was readily destroyed by repetitions of the electrical spark. Thus the importance of the differentiation between papillomas and sessile carcinomas respecting the adoption of the proper form of treatment is a matter of first magnitude.

In the event of operable carcinoma, Thomas says, anything short of radical operation is folly. If the tumor be a papilloma, high-frequency electrocoagulation is by all odds the form of treatment productive of the best results. Even though the papilloma may recur—an event far less frequent after the high-frequency spark than the aseptic scalpel—the patient may be subjected to a repetition of the same form of treatment, while there is a limit to the number of major surgical operations.

111. **Fulguration in Treatment of Bladder Tumors.**—Geraghty states that only in tumors which were papillomas has fulguration succeeded in destroying them, and it has been possible to destroy not only the benign but the malignant papillomas. The response to treatment, however, in the benign as compared with the malignant is of considerable interest. In cases in which the tumors are cystoscopically and histologically benign the rapidity of disappearance is frequently astonishing. When, however, the papillomas are malignant the response to fulguration may be extremely slow and lead almost to discouragement. In cases in which the

histologic picture is distinctly malignant one can almost positively predict that the response to fulguration will be extremely slow. Sometimes small malignant papillomas will require many times the amount of treatment which would have been necessary to have destroyed a benign papilloma of the same size. In one case with multiple malignant papillomas covering the left lateral wall of the bladder and the tumors so fused at their surfaces that it seemed like one large tumor mass, seventy-five treatments, extending over a period of nine months, were necessary to entirely eradicate the neoplasms. The result in this case might be considered brilliant, because no radical operation could have given so complete a result. In the papillary carcinoma or sessile tumors, in which infiltration of the base is always present, the chances of eradication of the tumor by this method of treatment are practically nil, although considerable symptomatic relief may at times be obtained.

From the standpoint of ultimate prognosis it is important to have a knowledge of the nature of the growth removed, because in three of Geraghty's cases in which malignant papillomas had been successfully removed, death occurred later from metastases, although the bladder remained free from tumor. Furthermore, recurrences have been encountered only in cases in which malignant papillomas had been removed. Up to the present time recurrences have been observed in four cases. It is stated positively by Geraghty that fulguration should be the treatment selected for all papillomas, benign or malignant, in which infiltration of the bladder wall has not occurred, and that it yields results incomparably superior to the most radical operative procedures.

114. **Radium Versus Surgery in Treatment of Vesical Neoplasms.**—Cures in bladder tumors by the use of radium, Squier says, may be hoped for only in benign papillomas; although it may be possible in certain instances to render the symptoms of vesical malignancy less distressing by intra-urethral, suprapubic, rectal or cross-fire intra-urethral and rectal radiations. By the time vesical carcinoma has been made clinically manifest the growth has already extended too far to be readily influenced by the amounts of radium at present at their command. The question of the best management of a case of vesical carcinoma is no different from that of the management of carcinoma anywhere else in the body and such is, if the growth is anatomically accessible, wide surgical extirpation followed by every means known to science to treat any unremoved growth or recurrence. It may be found, however, as further experience develops more ingenious means to use radium intravesically, that radiating the tumor before operation may lessen the danger of tumor transplants occurring at the time of the operation.

115. **Pathologic Diagnosis of Tumors of Bladder.**—From a study of the pathology of 113 tumors of the bladder, among which there were fifty-five papillomas, forty-five papillary carcinomas, five squamous carcinomas, two metastatic carcinomas and six sarcomas, Buerger was able to conclude that a differential diagnosis between papillomas and carcinomas can be made in almost all instances on a pathologic basis. Certain morphologic criteria were accepted as indicating the existence or the acquisition of malignant traits in any given tumor. These criteria were found to be present in parts of the tumor that are accessible in so far as they can be reached by cystoscopic instruments, and in so far as adequate portions can be removed for histologic examination. The changes that are indicative of malignancy occur, not as heretofore assumed, in the "depth," in cases in which they may escape diagnostic methods, but manifest themselves, first, in the epithelium, not far from the surface, either with or without areas of infiltration. A test of the morphologic criteria proved conclusively that they are dependable and, if adopted, lead to correct diagnosis. Many of the other loosely accepted notions regarding the malignancy of papilloma per se were found to be fallacious. Only in one tumor out of 113 was a papilloma found to infiltrate and still retain "normal" cellular characteristics. In short, a reliable pathologic diagnosis and the possibility of differentiating between carcinoma and papilloma depend on the ability to obtain material and on the ability to recognize the criteria laid down as indicative of malignancy.

123. **Recurrence of Stone in Kidney.**—In the authors' series of 155 cases there were 5 deaths, 2 following nephrectomy, and 1 each following nephrotomy, pyelotomy and ureterotomy. On the basis of these cases one can only say to the patient that the risk of the operation is small; that the danger of progressive destruction of the kidney by the stone, if it is left, is large; that the probability of recurrence is considerable; that it depends somewhat on the age, undoubtedly somewhat on the method of operation and the skill with which it is carried out, but clearly somewhat on the entirely unknown factor—the liability or the ability of that particular kidney to form concretions. The outlook for the cases of stone in the ureter is apparently considerably better. In a series of 21 cases the probability of permanent cure seems to be about two to one.

126. **Anatomy of Imperfectly Descended Testes.**—Wood emphasizes that failure in the descent of the testis is due to developmental defects that take place very early in fetal life. The degree of the abnormality corresponds to the extent of interference in the formative period. As is well known, prior to the fifth or sixth week the sex characteristics cannot be distinguished. It has seemed to Wood that in the condition here alluded to, the impress of the stimulus that determines the sex has been deficient, so that the change from the primary indifferent stage has stopped short of perfection. As a consequence there are definite anatomic defects observed in connection with the testis which may involve other structures derived from the same embryologic source. As the majority of detained testes reach the scrotum by the time of puberty, in the absence of complications that demand relief it would seem wise to postpone operations for transplanting the testis in the scrotum until ample time has been given the organ to descend naturally. When operation is undertaken for any reason an effort should be made to trace the vas, and if it is not found to be connected with the testis an anastomosis may be performed, particularly if spermatozoa are present.

Tennessee State Medical Association Journal, Nashville

July, VIII, No. 3, pp. 117-160

134 Cancer's Predatory Warfare. E. R. Zemp, Knoxville.
135 Cancer from Laboratory Standpoint. W. Krauss, Memphis.
136 Cancer of Breast. R. Barr, Nashville.
137 Cancer of Colon. E. M. Sanders, Nashville.
138 Cancer of Stomach and Gall Passages. E. D. Newell, Chattanooga.
139 Cancer of Cervix. H. M. Tigert, Nashville.
140 Cancer of Skin. R. G. Henderson, Memphis.
141 Carcinoma of Prostate and Bladder. G. R. Livermore, Memphis.
142 Relationship of Roentgen Rays to Cancer. J. Witherspoon, Nashville.
143 Inoperable Carcinoma of Uterus. W. T. Black, Memphis.
144 Treatment of Cancer and Precancerous Conditions. J. M. King, Nashville.
145 Periosteal Sarcoma with Metastases. H. Acuff, Knoxville.

Texas State Journal of Medicine, Fort Worth

July, XI, No. 3, pp. 151-204

146 Report of Committee on Study of Cancer. H. R. Dudgeon, Waco; R. W. Baird, Dallas, and G. D. Bond, Fort Worth.
147 Facts Versus Speculation in Professional Conception of Cancer. W. C. MacCarty, Rochester, Minn.
148 What Public Should Know About Cancer. A. C. Scott, Temple.
149 Off Symptoms of Cancer of Stomach. M. Smith, Oklahoma City.
150 Cautery in Treatment of Cancer. R. R. White, Temple.
151 Cancer of Colon. J. S. McCelvey, Temple.
152 Some Rather Unusual Carcinomatous Growths. H. Hartmann, Temple.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

July 24, II, No. 2847, pp. 125-164

1 Composition and Pharmacologic Action of Spiritus Aetheris Nitrosi. C. R. Marshall and E. Gilchrist.
2 Fluid Extracts of Senna. R. Stockman.
3 Copaiba Oil and Resin. R. Stockman.
4 *Antiseptic Action of Hypochlorous Acid and Its Application to Wound Treatment. J. L. Smith, A. M. Drennan, T. Rettie and W. Campbell.
5 Hints on War Surgery. A. W. Mayo-Robson.
6 Diagnosis of Typhoid in Inoculated Subjects. G. D. Dawson.
7 *Cheap Absorbent Dressings for Wounded. C. W. Cathcart.

4. **Antiseptic Action of Hypochlorous Acid.**—Comparative tests were made by the authors to confirm the conclusion already arrived at by various investigators that hypochlorous acid is the most powerful antiseptic known. Practical methods of using this antiseptic have been devised. It can be used either as a gas or as a solution. The advantage of using the gas is that it will penetrate and will act at a distance. Both the gas and the solution, while extremely potent against organisms and their spores, cause little or no harm to the tissues. The effect of this antiseptic is purely local; the decomposition products are devoid of toxicity, and there is therefore no danger to be apprehended from absorption. A flow of lymph is induced from the wound as part of the reaction of the tissues. Fetor is rapidly eliminated. If pain and irritation occur they can easily be controlled by reducing the concentration of the antiseptic. The practical advantages of this antiseptic for field use are: (a) It can be used as dry powder and therefore obviates the difficulty of procuring water; (b) it can be introduced into the gauze pad of the first field dressing; (c) in cases in which water is available the same powder can be made up as a lotion for general use. The constituents of the powder are inexpensive and easily procured; and the preparation of the antiseptic is extremely simple.

7. **Cheap Absorbent Dressings for Wounded.**—As absorbents Cathcart says that sawdust, dried sphagnum moss, and peat moss are superior to cotton-wool in one important particular; they diffuse the discharges and retain them much better. While a mass of absorbent cotton-wool laid over a freely discharging wound will allow the discharge to pass through to the bedclothes before the greater part of the cotton-wool has been used, bags of these materials suck up the discharges and become filled with them. They are all very valuable also in cases in which there is an outflow of urine.

Lancet, London

July 24, II, No. 4795, pp. 161-212

8 *Functional Diseases of Arteries. L. Brunton.
9 *New Antiseptic Mixture for Treatment of Gunshot Wounds and General Surgical Application. P. Fildes, L. W. Rajchman and G. L. Cheatle.
10 Case of Diverticulum of Bladder. J. Everidge.
11 Treatment of Wounded Soldiers by Thermal Waters of Aix-Les Bains, Savoy. L. Blanc.
12 *Spirochetal Ulceration of Tonsils in Soldiers. W. Wingrave.
13 Case of Polyorrhomenitis. W. A. B. Young.
14 Case of Hysterical Paraplegia. A. Abrahams.
15 Two Cases of Traumatic Double Hemianopsia, with Partial Recovery. C. E. H. Milner.
16 Case of Severe Tetanus; Recovery After Intracerebral Injection. N. Scott and C. H. Barber.

8. **Functional Diseases of Arteries.**—In peripheral spasm of the vessels such as leads to chilblains or produces the symptoms of Raynaud's disease, Brunton has found salicylate of soda, either alone or combined with bromid, one of the most satisfactory of all the remedies. Another remedy which is useful in lessening a tendency to vascular spasm is thyroid gland, either in the form of tablets of the dried gland or of one of the numerous extracts made from it. When given in small doses such as 1 grain or so of the dried gland, it will prevent the occurrence of chilblains in many persons who would otherwise suffer much from them, and Brunton believes he has seen improvement from it even in elderly patients suffering from arteriosclerosis and high tension. He warns that its effects must be watched carefully and one of the first indications for its discontinuance often is the appearance of feelings of nervousness or irritability.

In cases of angina pectoris in which the tension rises during the attack he advises to keep it low by enjoining the patient to abstain entirely from butcher meat and strong soups, to be sparing of alcohol and to abstain from severe exertion of body or mind. Sodium nitrite, nitroglycerin, nitro-erythrite, nitromannite, and sodium and ammonium hippurate are all useful. Iodin, either in the form of iodid of potassium or iodid of sodium or their organic compounds, is another most useful remedy. In all cases it is most important to allow no accumulation of toxins to occur in the liver, and a mercurial pill two or three times a week, followed by a saline in the morning, is a most useful adjunct to all other remedies. In cases in which the tension remains high, notwithstanding the use of medicines, occasional bleedings may be very useful. The use of electricity sometimes gives better results than anything else. It may be used as high frequency, or by the Bergonié method. By the continued employment of a careful diet and the daily use of vascular dilators such as nitrites and iodids, and the occasional use of electricity, the tension in elderly people may sometimes be kept within moderate limits. The cerebral hemorrhage which would otherwise have taken place may thus be averted and life prolonged for years.

9. **New Antiseptic Mixture.**—Corrosive sublimate in a strength of 1:200 mixed with malachite green and applied in a spray in 80 per cent. alcohol is the antiseptic solution employed by the authors. In no case has there been any local irritation, while healing and the growth of epithelium have not been retarded. Even when the skin is already inflamed, as in an extensive pustular dermatitis involving the whole arm and hand, the solution applied daily did not irritate but rapidly alleviated the condition. Further, in no case did mercurial poisoning occur and the urine never contained albumin. The authors have frequently applied the solution to freshly cut surfaces, and it is used as a routine at the time of operation in amputations or other equally extensive operations. They warn that the solution should out quite efficient drainage.

More recently, in an endeavor to use the solution as strong as possible, the concentration of the mercury was increased to 1 per cent. Experience is too short to allow the authors to recommend this concentration definitely, although they have found it to be quite innocuous. Caution is given that this antiseptic mixture must never under any circumstances be brought into contact with the mucous membranes. The patients have received no local treatment in addition to the malachite-green mercury mixture, except fomentations in certain cases for the first few days. The mixture was sprayed on when the fomentations were changed and otherwise whenever the dressings were removed. The general effect of the treatment on the wound was excellent. The surface of the wound when "sloughy" or septic was rapidly brought to a healthy condition. The appearance of the granulations under this treatment was often remarkable. They are quite dry, pink and above all flat. There is no tendency to overgrowth or obstruction of sinuses. Although at the time of application the whole wound becomes green, the color is discharged after a few hours from the healthy tissues, but is retained in sloughs and dead bone. This is due to formation of the "leuko compound" of the stain by the action of the tissues. The growing edge of epithelium is usually intensely stained and it is thought probable that the dye has a stimulating effect on this growth.

The bulk of cases have been treated with the following formula: perchlorid of mercury (cryst.), 1 gm., 80 per cent. spirit (industrial), 100 c.c.; malachite-green (pure), 1.10 gm. 80 per cent. spirit (industrial), 100 c.c. The two solutions are kept separate in bulk and mixed for use in equal parts. It is found that if the two parts are mixed together and kept for several days a compound of mercury and malachite-green crystallizes out of solution. It is emphasized that the application of these solutions in spray must be thorough, comprising the whole wound and a wide area of the surrounding skin. A superficial sprinkling over a wound is of no value. There is a tendency to apply the mixture insufficiently owing to the smarting which results from the spirit basis in the same way as with iodin. This smarting, however, occurs only during the first three or four days of the treatment of a fresh wound, and though sometimes unpleasant does not persist for longer than one and one-half minutes. If the mixture is applied with a good spray held as far as possible from the wound and if the wound is vigorously fanned this disadvantage may be reduced to a minimum. After the first

three or four days the application is plainless. Care must be taken that the spirit has entirely evaporated from the skin before the dressings are applied, otherwise blisters may result. This is particularly important when fomentations are superimposed on the mixture; in fact, the stronger formula should not be used together with fomentations.

12. **Spirochetal Ulceration of Tonsils.**—The affection described by Wingrave is closely allied to, if not identical with, what is usually called "Vincent's angina," and is characterized by three prominent features: (1) a deeply excavated and sloughing ulcer on one tonsil; (2) offensively fetid breath, and (3) the presence of spirochetes and fusiform bodies in great numbers. It may be arbitrarily divided into two groups: (1) acute, lasting from four to seven days, and (2) subacute, a more persistent type, which lasts from two to three weeks. The *Spirocheta fetida*, or Vincent's spirochete is the exciting cause. The most efficient antiseptics are trikresol and formaldehyd solution. The slough should be thoroughly removed and the ulcer swabbed with a 5 per cent. solution of trikresol in alcohol. A frequent mouth wash of weaker solutions should also be ordered. When there is much swelling an excellent astringent wash is zinc permanganate, one-half grain in 1 ounce of warm water. These cases are often associated with pyorrhea alveolaris, which calls for frequent cleansing, and an excellent and pleasant mouth douche consists of 5 minims of English oil of lavender to the 5 per cent. solution of trikresol in alcohol. Of this a few drops may be added to half a tumblerful of water. Beyond a preliminary dose of gray powder, mercury is not called for.

Archives des Maladies du Cœur, etc., Paris

July, VIII, No. 7, pp. 193-236

17 *Therapeutic Utilization of the Eyeball-Heart Reflex. (Réflexe oculo-cardiaque dans les crises tachycardiques.) C. Lian.
18 *Participation of the Nerves in the Production of Edema. (De la part des influences nerveuses dans la production de l'œdème.) J. Heitz and S. I. De Jong.
19 Present Status of Knowledge as to the Functions of the Spleen. (La fonction érythrolytique de la rate.) H. Bénard.

17. Eyeball-Heart Reflex Utilized to Arrest Paroxysmal Tachycardia.—THE JOURNAL summarized Feb. 6, 1915, p. 546, Godlewski's advice not to let the heart pound its strength uselessly away in paroxysmal tachycardia, but to arrest it at once by modifying in some way the functioning of the pneumogastric nerve. He accomplished this by having the patients swallow a chunk of bread whole; its passage down the esophagus seemed to divert the attention of the pneumogastric nerve and the tachycardia was arrested. Lian here suggests that the eyeball-heart reflex might be utilized for the same purpose; this is the retarding of the pulse which follows when pressure is applied to both eyeballs. This occurs in nearly every one, the well and the sick, but the effect varies within a wide range in different persons. The pulse may be retarded by a twentieth, a tenth or even by a half of its former rate, the change becoming apparent in four or five seconds. The pressure is kept up only for about a quarter of a minute. The tracing is given of a case in which 30 gm. of syrup of ipecac caused no reduction of the pulse rate but during pressure on the eyeballs for fifteen seconds the rate dropped from 29 to 17 for that quarter of a minute. The effect is manifest for a little time afterward, and by repeating the pressure on the eyeball a few times the paroxysm may be arrested. Lian applies the pressure himself to the patient's eyeballs as he reclines with closed eyes, having first explained the procedure to him. The effect is more marked with application of considerable pressure for a quarter of a minute than of milder pressure longer continued. Swallowing the chunk of bread or other measures may also be used as adjuvants.

18. Nervous Influences in Production of Edema.—In one of the two cases reported a woman of 64 had long had high arterial pressure and complete arrhythmia. During the last three years there had been congestion of the liver and ascites but no edema. Then suddenly left hemiplegia and edema on that side appeared simultaneously. The edema appeared, therefore, with vasomotor paralysis set up by the cerebral lesion, and it gradually subsided with the return of volitional movements. In the second case edema developed in the leg below a gunshot wound, a month after the injury. There was complete loss of sensation in the domain innervated by the internal saphenous nerve on the side of the injury. Tests of kidney functioning revealed albuminuria and retention of water and Heitz ascribes the edema to the insufficiency of the kidneys. The paralytic vasodilatation is not sufficient alone to explain it, but served as the occasion for the development of the edema.

Archiv für klinische Chirurgie, Berlin

CVI, No. 4, pp. 559-834. Last indexed May 8, p. 1619

20 *Plastic Autodrainage of Ascites. (Klinische Erfahrungen mit meiner Methode der plastischen Ascitesdrainage.) E. Schepelmann.
21 *Solitary Blood Cyst in the Kidney Accompanied by Hematuria. O. Wulff.
22 Dermoid Cysts in the Spleen, and Wandering Spleen. (Milzdermoid und Wandermilz.) J. Kumaris.
23 *Heliotherapy at Home. (Behandlungsmethode der chirurgischen Tuberkulose in der Ebene.) E. Kisch.
24 *Endoneural Injection of Antitetanus Serum and Drainage of the Nerve in Treatment of Tetanus. F. Kempf.
25 Experimental Research on Causes and Prevention of Air Embolism. O. Kleinschmidt.
26 Arteriovenous Aneurysm in the Groin. (Aneurysma der Arteria iliaca und Vena communis dextra.) O. Orth.
27 Mechanism of Stasis Hemorrhages with Compression of the Trunk. (Entstehung von Stauungsblutungen nach Rumpfkompression.) C. ten Horn.

20. Autodrainage of Ascites.—Schepelmann obtains, at the slaughter house, calves' aortas which he draws over glass rods to keep in shape, and hardens and preserves in 10 per cent. formaldehyd. The end of the aorta thus prepared is introduced into the peritoneal cavity, the outer end left in the subcutaneous cellular tissue, sloping sharply downward. The details of four cases are given in which this plastic method was applied. A pronouncedly favorable influence was manifest in all; diuresis was promoted and the patients were much relieved. Two have died from the progress of the underlying disease; another is progressing extremely favorably. He uses two of these aorta drains, one on each side; the whole is done under local anesthesia and makes scarcely any demands on the strength of the patient. It is indicated exclusively for cases in which the ascites is the result of the inability of the blood from the portal vein to pass into the vena cava. This occurs preeminently with cirrhosis of the liver, passively congested liver, syphilitic liver trouble and tumors in this region. This method is contraindicated, he says, in all inflammatory forms of ascites and with generally sluggish circulation, as with kidney or decompensated heart disease.

21. Blood Cyst in Kidney.—Wulff's two cases have already been described in THE JOURNAL, Jan. 23, 1915, p. 379.

23. Sunlight in Treatment of Surgical Tuberculosis.—Kisch reports, with numerous illustrations, twenty cases of bone or joint tuberculosis in which exposure to the direct sunlight in the vicinity of Berlin, but in a region free from dust, gave extremely gratifying results. Kisch is assistant to Bier, and combines the latter's methods for inducing local hyperemia with the heliotherapy, having found that stasis hyperemia much accelerated the cure. This was particularly the case when there were fistulas. Some cases of severe tuberculous processes in ankle, knee, or elbow, with fistulas, healed completely in from four and four and a half to five or six months. The constriction hyperemia had an especially favorable influence on the functional outcome. Passive or active exercise of the joints is regarded as an indispensable element in the treatment. In the first case a girl of 15 had had lupus of the nose for four years and lupous ulcerations developed across the front of the neck, from ear to ear. Four months after beginning the heliotherapy all the lupus ulcerations were completely healed, those on the neck leaving merely linear scars, movable on their base. Photographs of this and other cases are given showing the progress under treatment.

24. **Endoneural Injection of Antitetanus Serum Plus Drainage of the Nerve in Treatment of Tetanus.**—Kempf reports two cases of tetanus in which he injected antitetanus serum into the trunk nerves innervating the region of the wound in the arm. He obtained access to them where they lie close together, in the axilla. By this means he apparently blocked the nerves and as the serum made its way upward it annulled the toxic action of the tetanus toxin already anchored in the motor centers of the medulla. This endoneural technic is much less dangerous than the subdural route, he remarks, as with the latter the cord and nerve roots are liable to injury. The infusion needle is pushed in upward after it is introduced into the trunk nerve, and the fluid is expelled under slight pressure. The nerve becomes distended at once, but this distention subsides as the antitoxin is taken up by the nerve, until very little is left at the site of the injection. The upward spread of the antitoxin can be thus followed with the eye while the nerve is left exposed.

The arrival of additional tetanus toxin from the infected wound is combated by draining the nerve directly, thus diverting out of the body the toxin and all injurious products coming from the wound. He used a straight metal tube for this purpose, fastened with catgut in a lengthwise slit in the nerve, one in the median and another in the ulnar nerve. A curving cannula might answer the purpose better, the tip being insinuated between the fibers of the nerve. Soft metal that can be bent seems advisable, and a wide lumen, the tube only a few millimeters narrower than the nerves in question. The operation was done under general anesthesia and both the men recovered. He had intended in case improvement did not follow at once, to sever all the motor nerves involved and suture them to the lips of the wound, as a radical measure to arrest further transportation of the toxin. Each stump could have been slipped into a rubber drain for convenience in handling. This would not only have interrupted all passage of toxins from the wound to the central nervous system, but would have allowed repeated injection of antitetanus serum into the central stump. When it is a question of life and death, the consecutive paralysis seems insignificant, especially as the nerve can be sutured together again later. In one of his two cases pronounced nervous disturbances have developed in the domain of the nerves which he had drained, but the wound itself and the tetanus must be incriminated for them to a certain extent. There is no reaction of degeneration. Experimental tetanus has been successfully warded off by severing motor nerves (Meyer and Ransom) and this experimental evidence sustains the theory and logic of the method. He injected at least 200 c.c. in all, distributed in the median, radial and ulnar nerves, working slowly, and changing from nerve to nerve as they bulged. His two cases were of a moderately severe type of tetanus with pronounced trismus, difficulty in swallowing, extensive stiffening of the muscles and attacks of dyspnea, developing after an incubation of eighteen or twenty days.

Berliner klinische Wochenschrift

July 5, LII, No. 27, pp. 705-732

28 Substitute for Wheat Starch. (Ersatz für Weizenstärke.) **P. G. Unna.**

29 *Treatment of Wounds in Prophylaxis of Infection. (Wirkung unserer Verbandmittel in ihrer Beziehung zur Infektionsbekämpfung.) **E. Gelinsky.**

30 Cervical Ribs. (Zur Entwickelung der Halsrippen.) **E. Falk.**

July 12, No. 28, pp. 733-760

31 Principles for Treating Ulceration. (Ueberhäutung und Ueberhornung.) **P. G. Unna.**

32 War Wounds of the Lungs. (Pathologisch-anatomische Beobachtungen an Kriegsverletzungen der Lungen.) **H. Beitzke.**

33 With Gunshot Wound of the Sacro-Iliac Articulation the Pelvis Sinks Instead of Rising. (Bei Schussverletzungen der Kreuzfuge ist das Trendelburg'sche Zeichen vorbanden.) **H. Coenen.**

34 Localization of Projectiles in the Trunk. (Einfacher Weg zur Tiefenbestimmung von Geschossen im Rumpfe.) **H. Scharfe.**

35 *Importance and Variety of Information Afforded from Bedside Study of the Bile. (Klinisch-pathologische Bewertung von Gallenuntersuchungen am Krankenbett.) **E. Medak and B. O. Pribram.** Commenced in No. 27.

36 *Scientific Temperature Taking and Estimation. (Die ärztliche Temperaturmessung.) **S. Wintritz.**

29. **Treatment of Wounds.**—Gelinsky expatiates on the five principles necessary to bear in mind with wounds of all kinds: (1) invariably aseptic work to keep off new infection. The tissues are generally able to take care of the germs that get in with the projectile. It is the subsequent infection that sets up the mischief; (2) repose, not only leaving the wounded in repose but ensuring repose by bed rest, posture or splints, for wounds in soft parts as well as fractures; (3) checking the further development of infection with antiseptic powders. For this he regards pulverized sugar as one of the best. Its powerful disinfecting action has been utilized for ages in the kitchen. Disinfectants are most effectual during and shortly after the incubation period. When this is past before antiseptics are applied, they are far less useful. The fourth principle is to provide ample means of escape for the secretions and facilitate this in every way. The fifth and last principle is the necessity for inducing local hyperemia by every known means. The earlier and the more intensively these measures are applied, the quicker the organism will conquer the infection, and with the least damage.

35. **Bedside Study of the Bile.**—Medak and Pribram comment on the ease with which bile can now be obtained with the duodenal tube for examination, and they emphasize the value of the information thus to be derived from its presence or absence and the proportions in it of cholesterin and bile pigment. They discuss the findings and their significance in cases of anemia, kidney disease, affections of the bile passages, arteriosclerosis with high blood pressure, cirrhosis, heart disease and in patients with tumors, and in pregnant women. They give summaries of several typical cases in each category to illustrate the light thus thrown on the nature of many puzzling disturbances, particularly those resulting from excessive destruction of red corpuscles. An abnormally high content of bile pigment in the bile is a certain sign of excessive destruction of reds, and, if anemia begins to be apparent, splenectomy is called for.

In regard to infection of the bile passages by way of the intestines, tests for urobilin in the duodenal juice are instructive only as the absence of urobilin testifies absolutely against such infection. The physiologic increase in the destruction of red corpuscles during the menses is reflected in the increased bile pigment content. The cholesterin content of the blood is increased and the cholesterin content of the bile decreased in cholelithiasis, kidney disease with high pressure and uremia from degenerative processes, cirrhosis of the liver with hypertrophy, catarrhal jaundice and diabetes. There is evidently retention of cholesterin in these conditions. After splenectomy, the cholesterin content of the blood increases while that of the bile diminishes; this occurs likewise from month to month during pregnancy. Only traces of cholesterin were found in the bile in one woman nine months pregnant.

36. **Importance of Precision in Taking the Temperature.**—Wintritz urges physicians to study their own temperature and that of others in health declaring that they will find that the normal range does not reach 37.5 C. (99.5 F.). Only 37 C. (98.6 F.), or not much above 36 C. (96.8 F.) is the normal temperature in health. They will also learn that there is no regular ratio between the temperature in the axilla and in the rectum; the difference betwen them may range from a small fraction of a degree to one or two whole Centigrade degrees. His article is an earnest plea for precision in taking the temperature, and he shows the extreme importance of the knowledge thus derived in regard to the existence of abnormal temperature when there is nothing else to suggest it, but which gives the clue to many a medical problem.

A particularly illustrative case was that of a woman with what seemed to be Banti's disease, the spleen very much enlarged, the liver thick, with gallstone colics, diarrhea and slight fever. Splenectomy was done and the woman died. She had had erysipelas several months before, with sepsis, and the temperature had kept a few tenths above 37 C. As

this was within the alleged normal range the physician paid no heed to it. The real trouble proved to be cholangitis and the sepsis explained the diarrhea. The temperature can never be taken with precision, Wintritz insists, except in the rectum or vagina, this alone is reliable. When the temperature here is found over 37 C. (98.6 F.) the patient should be kept in bed for the benefit from the rest, warmth and regular diet and measures for stimulation of the skin and kidney functioning. Not until the temperature in the rectum is permanently 37 C. is actual convalescence established. Precision in taking the temperature is particularly valuable in examining for life insurance, in detecting simulation, and in sustaining the diagnosis in many cases. Since he has made a practice of it, he is convinced that his medical horizon has been materially widened with resultant benefit to his patients.

Deutsche medizinische Wochenschrift, Berlin

July 1, XLI, No. 27, pp. 785-816

37 Orthopedic Prophylaxis for the Wounded. (Kriegsorthopädisches.) O. Vulpius. To be continued.
38 Welfare Work for the Blinded. (Kriegsblindenfürsorge.) E. Knickmann. Concluded in No. 28.
39 *The Neuropathic Child. (Abgrenzung und Begriff des neuropathischen Kindes.) E. Stier.
40 Technic for Measuring Roentgen Rays. (Eine Methode zu quantitativen und qualitativen Messungen von Röntgenstrahlen.) E. von Seuffert.
41 Russian and English Bullets. (Das neueste russische Infanterie-Explosionsgeschoss.) B. Riedel. (Ein von den Engländern benutztes explosives Gewehrgeschoss.) E. Senger.

July 8, No. 28, pp. 817-844

42 *Yeast as Food. (Nährhefe.) M. Schottelius.
43 *Indications for and Results of Operative Treatment of Exophthalmic Goiter. (Morbus Basedowii und Operationserfolge.) H. Starck.
44 Blood Count Apparatus. (Neuer Blutkörperzählapparat.) C. Metz.
45 Vaccination Against Typhoid. (Eine Typhusvakzine mit milderer Reaktion.) B. Johan. (Vergleichende Typhusschutzimpfungen.) M. K. John.
46 *Serous Meningitis from Lying on the Sand in the Sun; Two Cases. (Sonnenbäder und Nervensystem.) C. Römer.

39. **What Is Meant by a "Neuropathic" Child.**—Stier presents arguments to sustain his views as to the limitation of this term and its exact definition. The last ten years, he says, have focused attention on the psychic-nervous disturbances of children and cleared up the subject in many points, both neurologists and pediatrists having contributed to this. The conception of the spasmophilic diathesis has been an important factor in the progress realized. He emphasizes that the somatic disturbances in children after the first year or two are on the whole the same as in adults, varying only in degree or frequency. The child is a practically finished somatic organism at its birth, but in the psychic sphere it is entirely unfinished. Childhood stands in about the same relation to the psychic development of the adult as, in the physical sphere, the relation of the intra-uterine existence to life after birth. As proof that the cerebrum does not functionate at once after birth, he cites the child at Heubner's clinic born without any cerebrum but which acted and behaved during its brief span of life exactly like any normal infant. Another proof of this is that hemorrhage or other lesion in the cerebrum does not cause any functional disturbances at first. Only when the infant begins to make conscious movements, to grasp objects or stand, do functional disturbances become manifest. The simple nervous reflex mechanism is complete at birth, in normal conditions, and it is to disturbances in this sphere that he restricts the conception of neuropathic disturbances.

From study of sixty-five cases, mostly under observation for several years, he thus defines as neuropathic those children who suffer from functional disturbance of the phylogenetically oldest part of the nervous apparatus, an exaggerated reflex excitability of the central or vegetative nervous system or both. The resulting disturbances are abnormally easily elicited, or abnormally extensive or intensive motor reactions to slight or moderately severe stimuli. Or the unpleasant sensations from these stimuli may occur abnormally early. In the sphere of the conditional reflexes, there may be abnormally prolonged and intensive clinging to so-called bad habits, such as sucking the thumb or rolling the head back and forth during sleep. In themselves these habits cannot be regarded as pathologic in an infant, but only when they keep up after the age of 4 or later and resist efforts to break the child of the habit, they come into the category of pathologic perseverations. Psychopathic disturbances in children he defines as those on the part of the phylogenetically younger impulse and instinct life, as it develops early, constant to the species.

42. **Yeast as Food.**—The yeast powder described is a by-product of the breweries and averages 54 per cent. albumin, 7 per cent. ash, 3 per cent. fat and 28 per cent. nonnitrogenous extractives. A quarter's worth represents in the yeast food 904 calories to 623 in meat, while 1 kg. is said to represent in food value 3.3 kg. of moderately fat beef. Out of nine persons taking it systematically, five increased in weight; in two the weight remained stationary, and in two it declined. The tests were made with government authority and, with the consent of the subjects, on ten convicts. The daily ration of bread had been reduced at that time in the penal institutions from 750 gm. to 250 gm., and the yeast was given a trial in the hope of thus usefully supplementing the inadequate bread supply. The total gain in weight of the group taking the yeast was 4 kg., while a corresponding group without the yeast lost 9 kg. The difference thus in favor of the yeast food was 13 kg., or 28.6 pounds among nine persons. All seemed to find the yeast palatable and all felt better during the month while they were taking it.

43. **Results of Operative Treatment of Exophthalmic Goiter.**—In 450 cases of exophthalmic goiter in the last few years, which Starck has had in his charge, operative treatment had been applied in sixty-nine. In some the operation had been done five or six years before. A cure was realized in the operative cases only in about 30 per cent., but from 35 to 40 per cent. were benefited more or less; the others were not improved or the condition was aggravated, and 9 per cent. did not survive the operation. The choice of the anesthetic is important. The type with predominant nervous, myasthenic and psychic symptoms does better under general anesthesia, while with all others local anesthesia is preferable. The status lymphaticus contraindicates any operation; if it has to be done, local anesthesia must be used. In many cases the operation merely prepares the way for successful internal treatment. The most unfavorable time for an operation is when the affection is progressing, the stadium incrementi. A latent period or stationary stage is the most favorable. The prospect of improvement under operative measures is best with the type of exophthalmic goiter called "Kraus goiter heart" and many cases of the classic type of Basedow's disease. Little benefit can be anticipated in the nervous, myasthenic-psychic type with only moderate cardiovascular symptoms. The palpable size of the goiter is no criterion for an operation. Small soft goiters are often more important for the syndrome than large tough ones. The blood picture also is of no moment in considering operative treatment, and it is not materially influenced by the operation.

46. See current comment, THE JOURNAL, Aug. 14, 1915, p. 629.

Jahrbuch für Kinderheilkunde, Berlin

July, LXXXII, No. 1, pp. 1-86

47 Progressive Wasting Away of Adipose Tissue in Certain Regions and Extra Growth at Others; Two Cases. (Lipodystrophia progressiva.) E. Feer.
48 *Influence of the Food, Especially of Carbohydrates, on the Secretion of Urine in Infants. (Einfluss der Nahrung auf die Harnsekretion beim Säugling.) A. Niemann.
49 *Levulose Test of the Functional Capacity of the Liver in Infants and Children. E. Schede.
50 Rumination in Infants. Wanietschek.

48. **Influence of the Various Elements in Infant Feeding on the Production of Urine.**—Niemann protests that the profession is inclined too much to use a standard dietary formula for infants and force it on all alike, without considering the individual variations in the capacity to utilize it. His study of the effects of carbohydrates on the secretion of urine shows a wide range in the effect on different children, even with this universally used element of the food. A

number of illustrative cases are described in detail. After adding to the infants' test ration, a given amount of carbohydrate, such as 40 or 50 gm. of sugar or rye flour, distributed in three feeding bottles during the day, the amount of urine voided dropped by one-half in some of the infants, while others showed no difference in the output of urine. There was unmistakably in the first group a retention of water, evidenced further by an increase in weight. On suspending the carbohydrate, the urine increased again and the weight declined to their previous figures. He never observed any influence on secretion of urine from cane sugar, even in the babies who had responded with diminished production of urine to ingestion of milk sugar.

The humidity of the air was kept under control in his tests to eliminate any disturbing element from this cause. Borrino reported in 1910 that certain sugars reduce the production of urine in infants and children. She found the effect of cane sugar much more pronounced than that of milk sugar on older children. But her experiments were not conducted on a test diet and consequently the influence of the mixed diet detracts from the precision of the tests. Niemann queries which group of infants is to be regarded as normal: those whose urine output is unaffected by ingestion of certain carbohydrates or those in whom it is reduced. The infants in the latter group all seemed to be thriving particularly well on mixtures containing carbohydrates, notwithstanding that an added 40 or 50 gm. reduced the urine output. The six other infants, who were unaffected by the added carbohydrate, did not seem to thrive on the ordinary food mixtures containing carbohydrates. He thinks that this suggests that this latter group are unable to utilize carbohydrates.

49. **Levulose Test for Liver Functioning in Children.**—Schede tabulates the findings in fifty-nine cases, mostly infants, after ingestion of a test dose of levulose. The power of assimilating levulose seems to be greater in proportion in infants than in adults, growing less with age. The infants bore 4 gm. per kilogram of weight without its appearance in the urine.

The liver was supposedly healthy in all of the children with a few exceptions in which the condition was dubious and the findings inconclusive.

Medizinische Klinik, Berlin

July 4, XI, No. 27, pp. 741-768

51 *Trauma and Neoplasms. (Trauma und Gewächse.) E. Schepelmann.
52 *Research on Tetanus. (Ueber die "Fibrillentheorie" und andere Fragen der Toxin- und Antitoxinwanderung beim Tetanus.) L. Aschoff and H. E. Robertson. Commenced in No. 26.
53 Immediate Operative Treatment of Wounds of the Chest. (Chirurgische Behandlung bestimmter Formen von Brustverletzungen im Felde.) W. Jehn.
54 *Natural and Artificial Heliotherapy of Psoriasis. (Behandlung der Psoriasis mit ultravioletten Licht.) P. Linser.
55 *By-Effects of Antitetanus Serum. (Serumexanthem mit Grünsehen nach Einspritzung von Tetanus-Antitoxin.) F. Callomon.
56 Epidemic of Mumps with Unusual Localizations. (Ueber epidemische Speicheldrüsen- und Nebenhodenentzündung.) E. Schalit.
57 *The Thermoprecipitin Reaction in Diagnosis of Pneumococcus Infections. W. Schürmann.

July 11, No. 28, pp. 769-794

58 *Infant Mortality During the Heated Term. (Sommersterblichkeit der Säuglinge.) H. Kleinschmidt.
59 Summer Skin Diseases in the Active Army. (Sommerhautkrankheiten im Felde.) E. Saalfeld.
60 Ear Affections in the Active Army. (Als Ohrenarzt bei einer Sanitätskompagnie.) K. König.
61 Vermin Extermination. (Anleitung zu Improvisation und Betrieb von kleinen und mittleren Entlausungsanstalten) P. Uhlenhuth and Olbrich.
62 *Prophylaxis of Heat Stroke. (Vorbeugungsmassnahmen gegen Hitzschlag.) H. Richter.
63 *One-Man Litter for the Wounded. (Die Kufentrage.) M. Lonicer.
64 Research on the Laws of Heredity. II. (Abstammungs- und Vererbungslehre im Lichte der neueren Forschung.) W. Wangerin.
65 Urethra Disease. (Erkrankungen der Harnröhre.) E. Portner.

51. **Trauma and Neoplasms.**—Schepelmann comments on the emancipation of the neoplasm from its mother soil; the nonmalignant growths manifest this by killing off the cells in the mother tissues, and the malignant ones by infiltration besides into the adjacent tissues. He reviews the evidence that proves the importance of mechanical irritation as a factor in neoplasms, as well as chemical irritation and chronic inflammation. On the whole, however, only about 2 per cent. of all the cases can be traced to injury of these kinds. Lubarsch declares that no authentic case has yet been reported of cancer developing as a direct consequence of a single trauma. The pathologists know that even quite large tumors may exist without inducing the slightest symptoms. A trauma affecting the region would first make the tumor manifest. On the other hand, the region most frequently injured, the fingers, elbows and legs, are rarely the site of cancer. A causal connection between the trauma and the tumor is out of the question if the interval between the injury and the first symptoms is less than three or four weeks. Several months are required for the development of a neoplasm to the size of a walnut or hen's egg. While admitting that a trauma might accelerate the course of a neoplasm, Lubarsch concludes from his exhaustive research that this is possible only when the injury was such that it exerts a powerful influence on the tumor, modifying its cell metabolism; when the growth was accelerated beyond what is usually observed in such tumors, and, finally when histologic examination of the tumor reveals traces of direct injury, bleeding, necrosis, and unusual acceleration of the growth.

Metastases, on the contrary, are extremely liable to locate and develop at the site of even a single trauma. The daughter tumors are particularly liable to locate in the more vascular organs, such as the bone marrow and liver. It is not yet decided whether a trauma is able to modify the growth of a tumor from a benign to a malignant character. But it seems probable enough to be assumed as possible in workmen's compensation cases. Cohnheim insists that no tumor is malignant from the start but becomes so only by the dropping out of inhibiting influences; this assumption renders the acceptance of traumatic metaplasia still more plausible. Retrogressive processes in tumors, cavity formation, etc., occur without intervention of trauma, but the latter may be incriminated for rupture of cystic tumors and for hemorrhages or torsion of the pedicle.

52. **Treatment of Tetanus.**—Aschoff and Robertson report the results of extensive experimental research and clinical experience with tetanus which apparently establish that when the symptoms of descending tetanus have already appeared, subcutaneous injections of antitoxin are absolutely ineffectual. A subarachnoid or intravenous injection of 20 units is called for, possibly supplemented by a cervical or lumbar immediate injection of from 20 to 100 units. If the lumbar route is taken, the pelvis should be elevated afterward or the injection will do no good. Repetitions of the injection at weekly intervals can be done by the subcutaneous route or by local application of antitoxin. The most economical and convenient method for local application is to soak cotton in the antitoxin and then dry it. Just before applying it to the wound, the dried cotton is moistened with salt solution. The antitoxin is promptly absorbed by the wound from the moist cotton. This or a subcutaneous injection of the antitoxin should be the routine procedure preliminary to any operation on the injured limb. The preventive injection should be given the same day as the injury or, at least, the dressings should have antitoxin poured on them. Their experience indicates that the preventive injection protects practically for one week only. If the wound has not cleaned up by that time, the antitoxin dressing should be applied. If an operation is contemplated the eighth day or later, and the wound has not cleaned up, a subcutaneous injection of 20 units should be made from twenty-four to forty-eight hours beforehand, or an intravenous injection shortly before the operation. By "antitoxin" they mean antitetanus serum.

54. **Phototherapy in Psoriasis.**—Linser refers to the excellent results from direct sunlight in treatment of psoriasis that have been reported from mountain health resorts. He began applying this treatment in 1911 and obtained unmistakably favorable effects, but as the sunlight in Tübingen is so undependable he soon supplemented it with the "artificial mountain sun," the mercury vapor light. His experience

with over 100 cases of psoriasis in the last two years has amply confirmed the value of this method of treatment as one of the most successful at our disposal. No untoward by-effects were ever detected, and the patients prefer the artificial ultraviolet rays technic to all other measures. Petrolatum and warm baths were the only adjuvants used. The aim is to induce a distinct inflammatory reaction in the patches of psoriasis. If the environment shares in the reaction, this does no harm. The most favorable reaction is when slight serous exudation occurs. Blistering does no harm but is more painful and takes longer to heal. When the phototherapy is applied so cautiously that there is no pronounced reaction, the treatment fails to modify the psoriasis. In unusually rebellious cases the Roentgen rays may be preferable. There have been no signs of recurrence in part of the patients. The psoriasis has returned in some but in a milder form and with a longer interval of freedom than previously under other measures. In short, he regards helietherapy, natural or artificial, as essential progress in the management of psoriasis.

55. **By-Effects of Antitetanus Serum.**—The robust young soldier eighteen days after he had been wounded in the leg developed symptoms of tetanus and was given a subcutaneous injection of 100 units of antitetanus serum. The tetanus symptoms subsided, but thirteen days after the injection the temperature ran up to 38.1 C. and the man saw everything bright green, "green as a meadow," even the sky. This was soon followed by an itching, bright red exanthem over the entire body. The disturbance in vision had all passed away by the next day, but the exanthem persisted for a few days, and during this period there was a mild and brief return of the tetanus symptoms. No drugs had been given and there was nothing but the antiserum to explain the disturbances. Callomon has found records of "green seeing," with other symptoms of poisoning, from cannabis, quinin, santonin, etc. It was observed alone, following a week of amaurosis, only in one case of santonin and two of digitalis poisoning on record. There is also a case on record in which after eating spoiled sausage, ptosis and pupil symptoms developed, along with "seeing everything green."

57. **Thermoprecipitin Reaction Differentiates Pneumococcus Infection.**—Schürmann adds the extract of the organs to be tested, the effusion, pus or cerebrospinal fluid to a strongly precipitating pneumococcus serum. With a positive reaction a white ring forms within fifteen minutes at the line of contact of the two fluids. Attention was called to this thermoprecipitin reaction in 1911 by Ascoli and Valenti, and it has amply proved its value for the differential diagnosis of anthrax, etc. Schürmann found the test decisive by the seventh day onward in the five cases of pneumonia in which he has applied it.

58. **Infant Mortality during the Summer.**—Kleinschmidt emphasizes the necessity for regarding all the numerous separate factors in infant mortality during the heated term, his idea being that a chain is only as strong as its weakest link. The danger lies in overlooking some insignificant weak link. He denounces the rubber diaper during the hot weather as liable to keep a child unnecessarily and dangerously hot, while checking the normal escape of moisture from the skin. The parts where the child sweats most are liable to become clogged with sweat and decomposing products and thus afford a predisposition to infectious processes. This is one reason why such processes are more common in summer and explains them without assuming a loss of immunity from the heat.

Serious results may follow feeding infants with too acid buttermilk. The acid seems to be a stimulant in small amounts, promoting the physiologic functions; in larger doses it induces pathologic overfunctioning, thus doing direct harm. In certain institutions for infants where great pains are taken to have the bacterial content of the milk reduced to the minimum, much sickness has prevailed when buttermilk was given during the heated term. This happened too often for a casual coincidence, and it was traced to the overacid buttermilk.

62. **Prophylaxis of Heat Stroke.**—Richter remarks that often it is the apparently most robust who are affected by heat stroke. Sometimes loss of sleep, hunger or nervous strain seem to be predisposing factors. The clothing is an important element in bringing on heat stroke. It is fortunate, he adds, that the uniform has been changed so that the old high stiff collar is done away with, and the shirt can be left open on the chest. He advises keeping the shirt wet over the region of the heart or pinning with a safety pin a wet folded handkerchief inside the shirt at this point. Better still is a compress with perforated waterproof outer cover to suspend over the heart. A wet cloth in the soldier's helmet is felt as gratefully cool at first but it soon begins to generate heat and oppress the head. To obviate this he has devised a spring contrivance holding a perforated sheet of felt. This is thoroughly wet and fastened in the helmet with the springs which hold it above contact with the scalp while air circulates freely below, above and through its openings.

63. **The Vertical Stretcher.**—Lonicer gives an illustrated description of a one-man stretcher for carrying a wounded soldier in the trenches. It looks something like a toboggan stood on one end. The side bars are extended to curve forward and pass over the bearer's shoulders. There is a small seat for the wounded man, and he is fastened to the litter with straps around the chest and above and below the knee, while the feet rest on the curve of the toboggan, which drags on the ground.

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XXVIII, No. 4, pp. 619-748. Last indexed May 8, p. 1622

66 *Gangrene of Lung from Concrement in Bronchus. (Lungengangrän bei Bronchialsteinen.) Blecher.
67 *Operative Treatment of Chronic Constipation. F. Rost.
68 *Diverticulum Formation in Stomach. (Divertikelbildung am Magen, insbes. funktionelle Divertikel.) F. de Quervain.
69 *Aminolytic Ferment in Stomach Content with Cancer. J. Halpern.
70 *Banti's Disease. J. Krull.

66. **Primary Bronchus Stone.**—Blecher summarizes from the literature three cases in which the lung became gangrenous in consequence of the presence of a concrement in a bronchus. Necropsy showed one stone in the bronchus in one case, two stones in the second and three in the third. In a fourth case a man of 45 had pneumonia at 35, a catarrhal pulmonary affection at 36 and pleurisy at 40. At 43 a dry cough developed which has kept up constantly since. Finally he expectorated a large quantity of fetid masses and afterward coughed up several concrements the size of peas, but no tubercle bacilli were found. After resection of the fifth and sixth ribs there was some but not much improvement. The lung tissue looked gray and felt tough, and roentgenoscopy showed a number of small shadows probably cast by concrements. The further course of the case is not known. Blecher then reports a somewhat similar case from his own experience. The patient was a man of 23 who in 1913 had a brief attack of what seemed to be pleurisy, but had apparently entirely recovered when about a month later he began to cough and had pain in the right side. The trouble proved to be a primary stone in the bronchus of the lower lobe, entailing gangrene and pyopneumothorax from gas-producing suppuration. The diaphragm and the base of the lung became adherent and bacteria made their way into the pleura and peritoneum without actual perforation. The eighth rib was resected and quantities of pus released but the improvement observed at first became overshadowed with symptoms of peritonitis which soon proved fatal. In such cases the gangrenous process may mask the calculus, its shadow blending with that of the concrement. The prospects for operative relief are better with a solitary stone.

67. **Operative Treatment of Chronic Constipation.**—Rost reviews the physiology of the large intestine and its functioning, and especially of the act of defecation. Disturbances in the latter may be from mechanical obstacles, malformation in the rectum, from spasm of the sphincter, or from derangement of the motor functioning of the lower colon from reflex impulses generated in the sensory tracts. These

three groups may be combined or overlap. The spastic form of constipation is generally located in the middle or distal colon. This causes fecal matters to accumulate in the proximal colon, and absorption of toxic substances here is the cause of the general symptoms observed with this form. Resection of the proximal colon puts an end to this absorption. The feces then enter the distal colon in fluid form, which may reduce the tendency to spasm, but, unfortunately does not always do this. The obstipation may likewise be due to mechanical causes, abnormal course of the parietal peritoneum, stretching of the serosa as the proximal colon increases in size, or to adhesions from pericolitis. The constipation is primary but the secondary disturbances set up a vicious circle.

The majority of cases of obstipation belong in neither of these categories but are the result of disproportion between the proximal and the middle and distal parts of the colon. Necropsy in two such cases clearly revealed a relative hypertrophy of the proximal, and atrophy of the other parts of the colon. The middle and distal portions thus are the true source of the trouble, but the seat of the disturbance resulting therefrom is located in the proximal colon. Hence removal of this portion cures the disturbances although the actual cause is not thereby done away with. Whether the obstipation is permanently cured at the same time depends on the degree of the insufficiency of the middle and distal colon.

In still another type of obstipation, the colon lacks reserve power, and thus becomes readily exhausted when it has to work under unfavorable conditions, such as inflammation, movable colon or adhesions. In these cases removal of the unfavorable conditions, curing the inflammation, fastening the colon in place, or breaking up adhesions is sufficient to put an end to the piling up of feces in the proximal portion. It is usually such a difficult matter to determine the exact degree of insufficiency in such a case, that it is generally safer to exclude the proximal colon than to trust to these minor procedures.

He reports two typical cases in which they answered the purpose, however, one patient being cured by cecopexy of painful oppression in the right lower abdomen and obstipation for a year. During the nearly five years since, there has been no return of the pain or tendency to extreme constipation. In the other case the inflamed appendix was removed in addition to cecopexy. Rost is assistant at the surgical clinic of the University of Heidelberg, in charge of Wilms, and this study of the indications and results of operative treatment of extreme constipation fills sixty-four pages, with twelve roentgenograms of the principal types encountered.

68. **Diverticulum in the Stomach.**—In both the cases reported the diverticulum was discovered in operating for gallstones. The patients were a woman of 60 and a man of 76, and the Roentgen rays showing the air bubble in the diverticulum also showed that the latter must be adherent to the spine. De Quervain reproduces the roentgenograms, accompanying most of them with explanatory diagrams.

69. **Early Diagnosis of Gastric Cancer by Aminolytic Ferment.**—None of the methods proposed for this purpose indicate more than that the chemistry of the cancerous stomach varies from normal in different directions. Halpern has been seeking for some pathognomonic element in the stomach findings, and here reports the discovery of a ferment, an enzyme which splits the amino group out of monoamino-acids, under formation of formic acid. He has been studying the rôle of formic acid in the production of diabetes, and in the course of this research had occasion to test the stomach content for it in a large number of cases. By this empiric means he established that the gastric juice in cancer cases possesses in a high degree the property of splitting amino-acids with production of formic acid. This characteristic proportion of amidase has been found to date in only twelve of thirteen cases of gastric cancer or suspects, and he regards it as probably a product secreted by cancer cells. Further research will show whether the presence of this ferment can be regarded as a dependable early sign of cancer or whether it occurs with other affections. He describes the glycocoll, phosphoric acid and calomel technic for its detection.

70. **Banti's Disease.**—Krull gives full details of three cases which correspond to Banti's description twenty years ago of the syndrome characterized by enlargement of the spleen with cirrhosis of the liver, ascites and anemia. But he denies that it is a separate morbid entity, and his review of the literature confirms his stand. He insists that Banti's disease is merely one form of Laennec's atrophic cirrhosis of the liver; the spleen is only a little more enlarged than with the latter. The primary cause may be acquired or inherited syphilis, malaria or gastro-intestinal disturbances, but the liver, not the spleen, is the organ mainly responsible. The red corpuscles are often present in numbers up to 4,000,000 but the hemoglobin percentage is low, and there is every reason to assume that a long latent stage of cirrhosis of the liver has preceded the clinical manifestations. Gastro-intestinal hemorrhages may occur repeatedly, and this explains the anemia.

Münchener medizinische Wochenschrift, Munich

June 29, LXII, No. 26, pp. 873-904

71 *"Open" Puncture of the Pleura. A. Schmidt.
72 Rigor Mortis. (Zur Kenntnis der Totenstarre und der physiologischen Vorgänge im Muskel.) L. Wacker. Concluded in No. 27.
73 The Agglutinating Reaction in Typhoid. (Die Gruber-Widalsche Reaktion und die Beschränkung ihrer praktischen Verwertbarkeit für die Typhusdiagnose.) W. Gaehtgens.
74 The Mechanics of Nerves. (Ueber Nervenmechanik und ihre Bedeutung für die Behandlung der Nervenverletzungen.) A. Stoffel.
75 Extension and Support for Fractures. (Vereinfachte Streckbehandlung der Knochenbrüche der Beine.) A. Wildt. (Mittellabehandlung der Oberarmschaftbrüche.) A. Nussbaum.
76 Technic for Amputations. (Zur Amputationstechnik bei Kriegsverletzten.) H. Matti.
77 Shell and Grenade Wounds. (Gehirnverletzungen durch Granatsplitter.) H. Goetjes. (Verletzungen durch Minenwerfer und Handgranaten.) M. Strauss.
78 *Treatment of Extensive Wounded Areas. (Zur Behandlung grosser Wundflächen.) H. Schaedel.
79 *Chlorinated Lime in Treatment of Wounds. (Eine einfache, wirksame Behandlungsmethode bei infizierten Wunden.) W. Münch.
80 Stretching Sciatic Nerve for Neuralgia After Gunshot Wound. (Behandlung der Ischiadikusneuralgie nach Schussverletzung mit Nervendehnung.) H. F. Brunzel.
81 *Phototherapy for Wounds. (Wundbehandlungen mit Licht.) E. Schottelius.

71. **Simplified Puncture of the Pleura.**—Schmidt has discarded all complicated apparatus and uses merely a trocar, placing the patient on his side across two beds so that the chest region forms the bridge between. The trocar is introduced at the lowest point of the pleura and the effusion is allowed to drip freely into a vessel below, with no attempt at aspiration or effort to prevent entrance of air into the pleura. The air will automatically fill the space left by evacuation of the fluid under the influence of gravity, and this is rational and all that is needed. There is no reflex disturbance from the puncture, and it is so simple that any physician can apply it anywhere. He has never witnessed the slightest injury from admission of unfiltered room air in this way. He uses a trocar about 8 cm. long and 0.4 cm. wide, and introduces it after the patient has been made comfortable with pillows, with his shoulders on one bed and the buttocks on the other. The trocar is gradually withdrawn until it just enters the chest, to ensure the draining away of the last of the fluid. Then the patient is asked to breathe deep or cough, and the trocar is finally removed at the acme of the expiration phase, and the wound closed with a broad strip of adhesive plaster. He urges the physician to emancipate himself from more complicated technics and lose his dread of puncture of the pleura. The admission of air aids in interpretation of the Roentgen-ray findings, while the open puncture drains away all the fluid, and the simplicity of the technic invites its early application, which forestalls development of adhesions, compression of organs, etc. This is especially important with hemothorax after a gunshot wound of the chest. With this, however, the fluid should be drawn a little at a time, and the patient should not be on his side. Recently he has been injecting a little iodoform glycerin into

the chest just before removing the trocar, but is unable to say whether this benefits or not.

78. **Treatment of Extensive Wounds.**—Schaedel is in charge of a base hospital and relates that the "epidemic of trauma" now prevailing has enabled the various methods of treating wounds to be compared and the advantages of some to be recognized. The methods that have stood the comparison best are with gloves, washed in hot soapy water for two minutes after each change of dressings, then scrubbing in mercuric chlorid and alcohol for half a minute each. The dressings are handled with forceps. The environment of the wound is cleaned with benzin, shaved with alcohol and swabbed or sprayed with tincture of iodin. The surface of the wound is sprinkled with 10 per cent. hydrogen dioxid. The dressings are changed every day and the wound is generally clean in three or four days. After this sugar is scattered on the wound, and this aids in the further cleansing, while reducing secretion. He ascribes its action to the nascent acids split off from it, and has long proclaimed the worth of sugar in treatment of leg ulcers. It is a further principle with him to refrain from anything that might injure the young epithelium. Whenever there is danger of its being rubbed off, he applies a rolled compress as a wall around it and, after strewing with sugar, another compress is applied over the whole, not touching the wound. When the wound was exceptionally long in healing, chronic lead poisoning or syphilis or abuse of tobacco was often found responsible for this.

79. **Chlorinated Lime in Treatment of Wounds.**—Münch dissolves two tablespoonfuls of chlorinated lime in a dish of warm water and bathes all parts of the wound with it for twenty or thirty minutes twice a day, then fills the wound with dry gauze. He supplements this local treatment with horsetail (scouring rush) tea internally, being convinced that the silicic acid in this is an important aid in the healing of tissues. The decoction is taken like other tea, several times a day.

81. **Light in Treatment of Wounds.**—Schottelius uses an ordinary incandescent electric light bulb and exposes the wound to it several times a day to a total of eight or nine hours. The immediate local effect, he says, was as striking as the general effect from day to day later. All the patients told of relief of pain from it. Paper and a sheet are thrown over the whole and the temperature of the enclosed space grows high, but he ascribes the benefit to the light rather than to the heat. The bulbs were of 30, 50, or 100 candle power.

Zentralblatt für Chirurgie, Leipzig

July 3, XLII, No. 27, pp. 473-488

82 Utilization of the Heel or the Patella in Secondary Covering of Stump After Amputation on Account of Suppuration. F. Oehlecker.

83 Roentgen Localization of Foreign Bodies. (Zur Lokalisation der Fremdkörper nach Levy-Dorn.) Weischer.

July 10, No. 28, pp. 489-504

84 Osteoplastic Restoration of Edges of Orbit After Wounds in War. W. Levy.

85 *Irritation of the Kidneys After Novocain Anesthesia. (Nierenreizung nach Novokainanästhesie.) R. Morian.

86 Lever for Fractured Bones. (Frakturenhebel.) Ansinn.

July 17, No. 29, pp. 505-528

87 Simplification of Extension Treatment. A. Wildt.

85. **Irritation of the Kidneys from Novocain.**—Morian declares that irritation of the kidneys is by no means uncommon after application of novocain for local anesthesia. In from 5 to 10 per cent. of the cases in which he has used it, albumin became evident in the urine within a few hours after the injection of novocain, and it could be detected afterward up to a maximum of forty-eight hours. The amounts ranged from merely traces to 0.5 per thousand. Formed elements were also present in the urine. The output of urine did not seem to be materially modified by the irritation of the kidneys, but sometimes it was irregular and sometimes scanty. The adult patients had been injected half and quarter of an hour before the injection with 0.01 gm. morphin. The albuminuria did not seem to be dependent on the amount of novocain used, or the site of the injections. Almost every one of the patients operated on under local anesthesia suffered from vomiting later; it usually came on a few hours after the operation. He adds that neither morphin nor epinephrin induce albuminuria, so that only the novocain can be incriminated, although albuminuria as a by-effect of novocain has not been recorded hitherto, to his knowledge. He repeatedly tested the blood pressure during the novocain anesthesia, and found that it was not affected by the novocain. Hence the albuminuria cannot be ascribed to fluctuation of the blood pressure. Schwarz reported in 1907 that he had observed albuminuria up to 7 per thousand after stovain anesthesia.

Zentralblatt für Gynäkologie, Leipzig

July 3, XXXIX, No. 27, pp. 457-472

88 Treatment of Pregnancy Kidney and Eclampsia. W. Gessner. (Reply to Stoeckel's article in No. 17.)

July 10, No. 28, pp. 473-488

89 Duration of Pregnancy. (Zur Diskussion über Schwangerschaftsdauer.) B. S. Schultze.

July 17, No. 29, pp. 489-522. H. Fritsch Memorial Number

Gazzetta degli Ospedali e delle Cliniche, Milan

June 24, XXXVI, No. 50, pp. 785-800

90 Temporary Compensation to Workmen After Industrial Accident. (Per la liquidazione della parziale temporanea da infortunio sul lavoro.) G. de Luna.

Policlinico, Rome

July 11, XXII, No. 28, pp. 925-956

91 *Vincent's Angina; Two Cases. (L'amigdalite ulcero-membranosa.) C. Taccone.

90. **Ulcerative Membranous Tonsillitis.**—Taccone reports two cases of Vincent's angina in children of 10 and 12 and emphasizes the importance of getting rid of the false membrane. He advises washing it out, using a liter of water at least, under pressure as from an ordinary irrigator. This lavage with boiled tepid water should be repeated every three hours; it is not necessary to make it strongly antiseptic. The patches of membrane can be wiped off with a cotton wad dipped in ether-iodin solutions. By gently twisting the cotton, the patch comes away with it without eroding the tissues below. The moment the patch has been removed, the region beneath must be sterilized with some strong antiseptic. He prefers hydrogen dioxid, undiluted for this, but some use salicylic acid, potassium permanganate, copper sulphate or salvarsan for this local treatment. In his two cases, under local measures, recovery was complete in about three days.

Riforma Medica, Naples

July 10, XXXI, No. 28, pp. 757-784

92 Treatment of Typhoid in the Active Army. (Sulla cura della febbre tifoide in campagna.) M. Ascoli. Commenced in No. 27.

93 *Hypertrophic Cervical Pachymeningitis. S. Rizzardo.

94 *Artificial Pneumothorax; Indications and Contraindications. G. Ciceonardi.

93. **Cervical Pachymeningitis.**—Rizzardo's patient was healthy until the age of 20, when he fell on the stairs while carrying a heavy weight and struck on his back and neck. Besides local pain in the neck and stiffness, he had girdle sensations and other symptoms of irritation of the cervical nerve roots, and during the nine following years these symptoms continued a chronic course, interrupted by long periods of improvement. The ninth year symptoms of compression of the spinal cord became superposed on the radicular syndrome. The symptoms indicate that the trouble is multiple and diffuse; nothing abnormal in the vertebrae can be detected by roentgenoscopy. The spinous processes are nowhere tender. The cerebrospinal fluid is slightly turbid and coagulates *en masse*; it contains 1.7 per cent. albumin and the globulin reaction is intense; with lymphocytosis and a few colorless red cells. Inoculation of guinea-pigs had proved negative but the Pirquet tuberculin test was intensely positive. Treatment as for syphilis produced no effect. The case is thus one of the very few on record in which hypertrophic pachymeningitis developed in the neck region in

consequence of a trauma, and a fall from a bicycle the ninth year brought on the final severe aggravation of all the symptoms which now confine the man to bed. Rizzardo thinks there can be no question of the diagnosis. He compares it with all the other affections which might be responsible for the syndrome.

94. **Artificial Pneumothorax.**—Cicconardi cites various authorities in regard to this "ingenious therapeutic compensation," the "only true means of probable cure in appropriate cases," as he says of it, and discusses the indications and contraindications. Only about 2 or 3 per cent. of the cases of pulmonary tuberculosis are suitable for this treatment. It is not adapted for the rapidly acute cases, nor for the cases with cheesy lesions, on a hereditary basis. It should be reserved for the chronic forms, preferably during the period of infiltration, with destructive lesions scarcely initiated, and positively unilateral. Laryngeal involvement need not be regarded as a contraindication. The method is ideal in treatment of incipient infiltration and ulcerative forms. It is indicated further with cavity formation if the cavities are not extensive or superficial. With a superficial cavity there is danger of rupture of the lung tissue under the compression, and this would complicate the artificial pneumothorax. He insists that the artificial pneumothorax is strictly obligatory and urgent for patients with hemoptysis, and it is always a certain and effective method of arresting the tendency to bleeding in the lungs. The contraindications are adhesion of the pleura, tuberculous foci elsewhere in the organism, especially in the bowels. Intestinal tuberculosis is generally rapidly aggravated by artificial pneumothorax. Disease of the cardiovascular system is the third contraindication. The consensus of opinion seems to be that the measure should be applied as soon as possible after the discovery that destructive lesions have become installed. This benefits not only the patient but his environment, as the dissemination of tubercle bacilli in his sputum is thus arrested.

Russkiy Vrach, Petrograd

January 31, XIV, No. 5, pp. 97-120

95 Individualization in Therapeutics. (Sushchnost liechenia i individualnia yavlenia.) V. N. Nikolsky.
96 Serotherapy in Scarlet Fever; 1,335 Cases. L. W. Aksinoff. Commenced in No. 4.
97 The Cause of Rhythmical Tremor in Hysteria. V. Y. Anfimoff.

February 7, No. 6, pp. 121-144

98 *Plastic Surgery of Dura Defects. P. P. Zdrodovsky.
99 Psychologic Factors in the Development and Repression of Alcoholism. J. V. Sajin. Commenced in No. 1.

February 14, No. 7, pp. 145-168

100 Explosive Bullets. E. V. Pawlow.
101 Apparatus for Sterilizing Dressings and Instruments. I. P. Ilin.
102 Salt Dressings for Treatment of Wounds. P. G. Zagorovsky.
103 *Poisonings with Denatured Alcohol or Varnish in Petrograd after Prohibition of Sale of Vodka. N. V. Kuznetzoff.
104 Pathologic Changes in Denatured Alcohol and Varnish Poisoning. V. N. Lukin.
105 *Lavage of the Stomach in Catarrhal Jaundice. D. G. Orndieff.

98. **Plastic Surgery for Dura Defects.**—The question as to the best method for patching a gap in the dura was studied by Zdrodovsky. He used Kirschner's method, transplantation of fascia lata. He experimented on eighteen dogs, in which he made trephining openings, 2 by 3 cm., and 4 by 2.5 cm. The openings were covered with fascia flaps and the latter were sutured to the edges of the dura. He thus succeeded in closing the defect of the dura, but did not always succeed in preventing adhesion formation. Only in 3 cases were there no adhesions between the fascia and dura. In 13 of 18 dogs he experimented on the dura mater of the brain; in 5 on the dura of the spinal cord. Four dogs succumbed to the operation. The animals were kept under observation from thirty to eighty days. In 6 cases the adhesions were friable, and in 3 they were solid. The adhesions are due partly to injury of brain tissue, of pia vessels or to coarse sutures, and partly they are the manifestation of the biologic reaction of the brain against the presence of a foreign tissue (fascia). Therefore he considers adhesion formation as an inevitable occurrence even when the pia and the brain are not damaged.

103. **Poisonings from Substitutes for Vodka.**—Kuznetzoff states that after the prohibition of the sale of vodka in Russia last August, cases of poisoning from denatured alcohol, varnish and other substitutes for the Russian whiskey began to crowd the hospitals. At Petrograd the number admitted to one large hospital had reached 1,292 by the end of the year, namely, 861 cases of poisoning from denatured alcohol and 382 from varnish and 48 from both combined. In 144 cases the patients were between 15 and 20; there were 2 aged 14 and one child of 12. There were 11 deaths from the denatured alcohol, all within the first twenty-four hours, and 4 in the varnish cases. The cases are classified by trade or profession, and Lukin discusses the pathologic anatomic findings.

105. **Treatment of So-Called Catarrhal Jaundice.**—Orndieff obtained excellent results in the treatment of this disease from lavage of the stomach in the morning before breakfast. The temperature of the water was 96 F., and the irrigation was kept up until the returning fluid did not contain bile. He used this method on thirteen patients (soldiers) and the improvement was rapid. No special diet was ordered. The yellow tint of the sclera and skin and the dark brown of the urine rapidly disappeared with the improvement in the general condition of the patient, of the blood, etc. On the second and third day of the treatment the free hydrochloric acid showed an increase, with a rapid decrease in the size of the liver and spleen, followed by normal temperature and gain in weight.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 19, I, No. 25, pp. 2119-2222

106 Distribution of Blood Explanation of Degeneration of One Half of the Liver. (Halfzijdigheid van leverontaarding als gevolg van de verdeeling van het bloed der poortader.) W. F. Wassink.
107 Dementia Praecox and the Internal Secretions. W. M. van der Scheer.

Hospitalstidende, Copenhagen

July 7, LVIII, No. 27, pp. 661-684

108 Modern Treatment of Tetanus. K. Schroeder.
109 *Incongruence Between Hemianopic Defects in Visual Field and Asymmetry of the Hemianopic Border Line as Local Sign of Brain Lesions; Eight Cases. H. Rønne.

109. **Defects in Visual Field with Brain Tumors.**—The defects in the visual field are reproduced for each of the eight pairs of eyes, and the findings are correlated with the special location of the lesion in the brain in each case.

Hygiea, Stockholm

LXXVII, No. 12, pp. 641-704

110 *Photophobia in Scrofulous Children. (Om ljusskygghet hos skrofulosa barn.) P. Silfverskiold.

110. **Blepharospasm and Photophobia in Scrofulous Children.**—Silfverskiold has had extensive experience with phlyctenular conjunctivitis and other forms of scrofulous ophthalmia and has become convinced that the blepharospasm is in reality photophobia, the result of irritation of the optic rather than of the trigeminal nerve. In 129 of his 145 cases there were tuberculous antecedents or existing tuberculous lesions, and the findings were strongly suggestive of this in 16 other cases. The tuberculin skin test was positive in nearly all the children examined. In 115 of the cases there were complicating suppurative affections including 8 children with adenoid vegetations. These findings confirm the view that the combined action of the toxins of both the tubercle bacilli and of other pyogenic bacteria is as a rule responsible for the eye trouble. There were 50 boys to 95 girls thus affected; he ascribes the greater prevalence in girls to the fact that girls stay indoors more than boys, while their long hair is harder to keep free from vermin, and the scratching opens the portals to infectious processes. He declares that tuberculin is an actual specific for this photophobia in scrofulous children, and reports a number of illustrative cases to sustain this assertion. Three injections at most of "old" tuberculin banished permanently the so-called blepharospasm.